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H.R. 10196

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LABOR—HEALTH, EDUCATION, AND WELFARE
APPROPRIATIONS FOR FISCAL YEAR 1968

HEARINGS
BEFORE THE
SUBCOMMITTEE OF THE
COMMITTEE ON APPROPRIATIONS
UNITED STATES SENATE
NINETIETH CONGRESS

FIRST SESSION

ON

H.R. 10196

MAKING APPROPRIATIONS FOR THE DEPARTMENTS OF
LABOR, AND HEALTH, EDUCATION, AND WELFARE, AND
RELATED AGENCIES, FOR THE FISCAL YEAR ENDING
JUNE 30, 1968, AND FOR OTHER PURPOSES

Printed for the use of the Committee on Appropriations



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DEPARTMENTS OF LABOR AND HEALTH, EDUCATION,
AND WELFARE, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1968

TUESDAY, APRIL 18, 1967

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:05 a.m., in room 1223, New Senate Office Building, Hon. Lister Hill (chairman) presiding.
Present: Senators Hill, Byrd, and Bartlett.

NATIONAL HEALTH STATISTICS

STATEMENT OF FORREST E. LINDER, DIRECTOR; THEODORE D. WOOLSEY, DEPUTY DIRECTOR, NATIONAL CENTER FOR HEALTH STATISTICS; LOUIS R. STOLCIS, EXECUTIVE OFFICER, NATIONAL CENTER FOR HEALTH STATISTICS; WILLIAM H. STEWART, SURGEON GENERAL; G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER, PUBLIC HEALTH SERVICE; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

NATIONAL HEALTH STATISTICS

For expenses of the National Center for Health Statistics in carrying out the provisions of sections 301, 305, 312(a), 313, 314(c), and 315 of the Act, **[\$9,312,000]** \$9,767,000.

Amounts available for obligation

	1967	1968
Appropriation.....	\$9,312,000	\$9,767,000

1572 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Vital statistics.....	164	\$2,045,200	217	\$2,668,200	+53	+\$623,000
Health interview statistics.....	62	2,274,000	62	2,300,900	-----	+26,900
Health examination statistics.....	77	1,370,900	77	1,368,200	-----	-2,700
Health records statistics.....	102	1,872,300	102	1,906,100	-----	+33,800
Health statistics analysis.....	19	267,400	19	221,700	-----	-45,700
Professional and technical assistance.....	20	300,200	20	301,900	-----	+1,700
Special evaluative statistical studies.....	-----	-----	10	1,000,000	+10	+1,000,000
Purchase of computer.....	-----	1,150,000	-----	-----	-----	-1,150,000
Total obligations.....	444	9,280,000	507	9,767,000	+63	+487,000
Unobligated balance, reserve.....	-----	32,000	-----	-----	-----	-32,000
Total, obligations and balance.....	444	9,312,000	507	9,767,000	+63	+455,000

Obligations by objects

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	444	507	+63
Full-time equivalent of all other positions.....	15	15	-----
Average number of all employees.....	428	488	+60
Personnel compensation:			
Permanent positions.....	\$3,468,700	\$3,924,500	+\$455,800
Positions other than permanent.....	104,100	104,100	-----
Other personnel compensation.....	34,800	37,800	+3,000
Total personnel compensation.....	3,607,600	4,066,400	+458,800
Personnel benefits.....	291,200	336,500	+45,300
Travel and transportation of persons.....	308,600	346,900	+38,300
Transportation of things.....	22,500	26,600	+4,100
Rent, communications, and utilities.....	454,000	485,900	+31,900
Printing and reproduction.....	199,500	210,200	+10,700
Other services.....	421,900	422,600	+1,000
Project contracts.....	882,900	1,751,600	+868,700
Services of other agencies.....	1,819,400	1,956,400	+137,000
Supplies and materials.....	59,000	64,000	+5,000
Equipment.....	1,215,400	101,600	-1,113,800
Subtotal.....	9,282,000	9,769,000	+487,000
Deduct quarters and subsistence charges.....	-2,000	-2,000	-----
Total obligations by object.....	9,280,000	9,767,000	+487,000

Summary of changes

1967 enacted appropriation.....	\$9,312,000
Unobligated balance, reserve.....	-32,000
1967 total estimated obligations.....	9,280,000
1968 estimated obligations.....	9,767,000
Total change.....	+487,000

Summary of changes—Continued

	Base		Changes from base	
	Posi- tions	Amount	Posi- tions	Amount
INCREASES				
A. Built-in:				
Annualization of 40 new positions authorized in 1968 for 80 percent of year.....				\$93,300
B. Program:				
1. Expand the vital statistics program:				
(a) Begin a new medical classification program.....			33	220,600
(b) Launch a national survey of family growth.....			20	409,900
2. Conduct special evaluative statistical studies.....			10	1,000,000
3. Rental of office space for new positions.....				40,000
Total program increases.....			63	1,670,500
DECREASES				
Decrease in pay above stated annual rate (261 days in 1967; 260 days in 1968).....				-14,200
Nonrecurring items:				
Purchase of a computer.....				-1,150,000
Rental of office space.....				-25,000
Costs relating to adaptation of international classification of diseases listing.....				-45,000
Costs of printing and distributing a physician's handbook.....				-35,000
Costs associated with the retirement or transfer of Washington coding staff.....				-7,600
Total decreases.....				-1,276,800
Total net change requested.....			+63	+487,000

Explanation of changes

New medical classification program..... \$220,600

The request will enable the Center to fulfill its commitment to accept and adopt the new recommendations of the international World Health Organization relating to the decennial revision of the International Classification of Diseases. It will also permit the Vital Statistics program to begin a more comprehensive classification of medical conditions listed on vital registration certificates. This comprehensive data is needed to study the interrelationships between the underlying cause and other secondary causes of death. Likewise, more comprehensive data on fetal deaths and live births will assist further medical research on diseases of the perinatal period.

National survey of family growth..... 409,900

Little is known about family growth in the United States, although it has many implications on the health, welfare and economy of the country. A National Survey of Family Growth will obtain needed information on family dynamics by means of a nationwide survey. Through this survey it will be possible to identify those segments of our society experiencing population growth, as well as the reasons for this growth. Data from the survey will be used for analyzing and interpreting such population changes as the current decline in the rate of family growth. Also, data will be obtained on the social and economic conditions under which children grow to adulthood since such data are of national concern and high importance to planners of public health programs.

Explanation of changes—Continued

Special evaluative statistical studies-----\$1,000,000

There is a demonstrated need within the Public Health Service for a series of statistical studies to evaluate Federal program efforts at both the State and local levels. These special studies, to be conducted in close collaboration with other parts of the Public Health Service, will involve a series of in-depth studies of changes in the health status of specific population groups attributable to identified inputs of health efforts. Types of studies to be supported include the relationship of changes in the health status of the elderly to their source of health care; health services and the health status of the poor; measuring improvements in the health status and the continuing health needs of population groups in areas with multiple problems; and the comparison of health services, environmental sanitation and the nutritional status for families living in areas of high infant mortality with those in areas of low infant mortality.

Rental of office space-----40,000

Rental of office space will be required for the new positions associated with the new medical classification program and the National Survey of Family Growth.

INTRODUCTION

The development of sound public policy and formulation of program plans to meet critical needs in the field of public health require comprehensive and objective basic health data. The National Center for Health Statistics serves as the principal resource, both to the Federal government and the health community, in meeting the need for such data.

The Center utilizes two basic types of mechanisms to produce national vital and health statistics. The first of these is a group of nationwide health surveys providing comprehensive data on medical, demographic and economic aspects of health conditions and utilization of health services; the second is the vital statistics program based on the tabulation and analysis of data derived from the actual certifications of birth, death, marriage and divorce. The Center also provides assistance to others in the field of public health in areas such as survey design, statistical sampling and data processing methodology.

During the past year the Center has continued to emphasize its responsibilities for providing valid scientific data to its professional publics on a current basis. Attention again has been focused on the production and publication of reports, and the more effective distribution of these reports, with the result that 42 were published in 1966.

To further improve its operations, the Center has opened a field data processing laboratory. Although the space for occupancy by the Center was only completed in early July, the laboratory is already carrying forward a field research program in survey methodology and conducting a comprehensive data preparation function which provides input data both to the vital statistics and hospital discharge survey programs of the Center. During the last several months other research activities, particularly in the area of systems research and design, have commenced and the data preparation activities are at their full strength.

The 1968 estimate reflects a net increase of \$487,000 from 1967. This results from a \$1,276,800 decrease for the non-recurring purchase of a computer and certain other items, and mandatory and program increases of \$1,763,800. The latter is primarily in the areas of vital statistics activities and special evaluative statistical studies. The program increases will enable the Center to provide some meaningful data relating to mortality and perinatal mortality through the coding of multiple causes of death and fetal death; to carry out comparative studies relating to the Eighth Revision of the International Classification of Diseases; to meet the highly important needs of researchers and planners for substantive data relating to population dynamics; and to initiate a series of statistical studies intended for the specific evaluation of Federal program efforts at the State or local levels. The narrative justification which follows presents the Center's requirements within seven major program areas.

Justification by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits:						
Vital statistics.....	164	\$1,341,000	217	\$1,669,600	+53	+\$328,600
Health interview statistics.....	62	544,300	62	580,600	-----	+36,300
Health examination statistics.....	77	751,900	77	749,200	-----	-2,700
Health records statistics.....	102	848,500	102	897,300	-----	+48,800
Health statistics analysis.....	19	191,400	19	190,700	-----	-700
Professional and technical assistance.....	20	221,700	20	224,000	-----	+2,300
Special evaluative statistical studies.....			10	91,500	+10	+91,500
Total, personnel compensation and benefits.....	444	3,898,800	507	4,402,900	+63	+504,100
Other expenses.....		5,381,200		5,364,100	-----	-17,100
Total.....	444	9,280,000	507	9,767,000	+63	+487,000

Vital statistics

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	164	\$1,341,000	217	\$1,669,600	+53	+\$328,600
Other expenses.....		704,200		698,600	-----	+294,400
Total.....	164	2,045,200	217	2,668,200	+53	+623,000

The individual States have primary responsibility for maintaining registration systems for vital events. State laws govern the data requirements of vital registration certificates, provide for the enforcement of registration, and determine many of the procedures to be followed in State offices.

One of the most successful efforts in Federal-State cooperation has been in the area of vital statistics. Through cooperative efforts with the States, the Center administers a vital statistics program for the improvement and standardization of vital registration systems and for the analysis and publication of national data.

Increasing uses of vital statistics have made it necessary to improve the efficiency of this program to ensure that accurate data are available for special analytical purposes. A recent development in greater efficiency was the establishment of a data processing laboratory. Functions relating to the preparation of computer input for the program are being conducted at this location. The accuracy of the work is extremely high and production rates exceed those attainable in the Washington area.

NEW MEDICAL CLASSIFICATION PROGRAM

In July 1965 the World Health Organization received recommendations from representatives of member countries gathered in Geneva regarding the decennial revision of the International Classification of Diseases. The World Health Organization is now incorporating these recommendations into a list of inclusive terms and an index. This action will have a decisive influence on the classification of diseases throughout the world in the decade beginning 1968. As a participant in preparing the recommendations, the Center has a definite commitment to accept the Classification and to adopt it at a specified time. Failure to take necessary action would jeopardize the usefulness of health data for the United States, make data from the United States difficult to compare with data from other nations, and seriously impair the professional stature of the Center.

In conjunction with fulfilling the ICD commitment, the Center needs to begin a more comprehensive classification of medical conditions listed on vital registration certificates. The refined research work of recent years has created an increasing need for more detailed data on the causes of death and the medical conditions existing at birth. As an increasing percentage of the population dies from the most common diseases—particularly heart disease, cancer, and stroke—it becomes more important to know the interrelationships between these diseases and other conditions existing at the time of death. Likewise, with the present heavy emphasis on the need to further reduce diseases of the perinatal period, it is essential that the Center develop more comprehensive data from fetal death certificates and certificates of live birth. For example, the Institute of Child Health and Human Development has expressed the need for such data on a number of occasions. Substantial information is already available on the additional classifications needed, the methodology for producing the data, and alternative methods of operation.

At the present time a great deal of medical information on the death certificate is lost for statistical analysis because the cause-of-death coding is limited to a single underlying cause. The handling of vital statistics analyses on the computer now makes it feasible to begin to code the additional diagnostic data, but this involves the assignment of International Classification codes to all diagnoses. The United States can obtain maximum advantage from the new Classification if it begins to code multiple causes of death and fetal deaths in 1968. This is also the year when the Center should begin comparative studies on the differences experienced between coding according to the old and new ICD listing.

Before coding can commence on a new basis, it will be necessary to increase professional resources in the Vital Statistics Division. Four additional positions will be needed to ascertain the needs of research workers, prepare instructional material, and devise proper methods for processing and analyzing the new data. Part of this task is now being launched with resources available in the Office of Health Statistics Analysis. Extensive revision and expansion of present computer programs necessitate two additional positions. Also, two additional positions are needed to assist in the publication of the new data. In terms of cost, however, the most significant need is for additional clerks to code multiple cause of death and fetal death. Experience gained in a 1955 pilot study indicates that multiple cause coding may require as much manpower as is required to do the present underlying cause-of-death coding. Additional coding clerks will also be needed to handle new questions on both the fetal death and live birth certificates relating to complications of pregnancies and labor, number of prenatal visits, previous pregnancies, and congenital malformations. It is anticipated that 25 positions will be required to process the expanded data needs and do the essential work necessary to relate the current and revised ICD listings. Thus, a total increase of 33 new positions and \$220,600 is requested in 1968 to expand this program.

National Survey of Family Growth

The growth of population has become widely recognized as a crucial problem in the social and economic development of many countries. The situation is so critical that the United States has expressed concern and has offered to assist other countries in understanding population dynamics. The President indicated his concern in the 1965 State of the Union Message when he said, "I will seek new ways to use our knowledge to help deal with the explosion in world population and the growing scarcity in world resources," and in the 1966 State of the Union Message, he stated that he would propose "to help those countries . . . by increasing our research. . . ." The United States National Committee on Vital and Health Statistics, in a recent report, stated:

"Little is known about human fertility, which lies at the base of rapid population expansion, one of the pressing problems of our time. It is urgently required that research in human fertility be extended."

In the United States, of the three classic demographic variables—birth, death, and migration—the most influential for population growth in the present era is birth. The death rate has declined and leveled off, while migration has not been a significant factor since the 1930's. The excess number of births over deaths has been the chief contributor to population growth. This excess fluctuates quite widely for reasons that are not well understood. It is necessary to learn more about those segments of the population in which such growth takes place, and

why. The implications of these problems for the health, welfare, and economy of the country are many.

The unexpectedly rapid decline in the Nation's birth rates during 1964 and 1965 emphasized the fact that in a society such as ours, where reproduction is largely under voluntary control, fertility is a highly variable phenomenon. We have seen the birth rate raise rapidly (as in the late 1940's) and we have seen it fall rapidly (as in the 1920's and the mid-1960's).

At present, with the use of data from occasional surveys and from the national birth registration system, there is a limited ability to interpret population changes, but it is yet severely limited. For example, we do not yet have data indicating the reasons for the current decline in family growth.

The social and economic conditions under which children grow to adulthood are of national concern and high importance to health program planners.

It is proposed that the National Center for Health Statistics undertake a biennial Survey of Family Growth on a national basis. Such a survey plan will have the advantage of being centrally organized on a continuing basis, possess sufficient flexibility to permit the introduction of new inquiries, and be specifically related to Federal program needs. Data will be obtained by means of a biennial interview survey which in the first biennium will consist of a relatively detailed inquiry among a sample of currently married women.

The Survey of Family Growth will be a continuing program planned on a two-year cycle. The first year will be concentrated on the field survey itself and the second year on the analysis of the results. Developing methodological studies deriving from the current survey and planning for the next survey will take place throughout each two-year period. By the third fiscal year, the survey program will be fully operative. Field data collection activities will overlap fiscal years and publication of findings will alternate from year to year between survey findings and methodological studies. Twenty new positions and \$409,900 are requested in 1968 to permit the Center to implement the Family Growth Survey. Ten of the requested positions will serve the direct professional needs of the program, four others will provide permanent data processing services, and the remainder will be necessary to provide publication functions, statistical advisory services, and administrative support.

Other adjustments to the Vital Statistics program include increases of \$40,000 for the rental of office space for the new positions. Decreases include \$7,600 for nonrecurring costs relating to transfers or retirements of employees assigned until recently to the Washington coding staff. Many of these employees were at unusually high steps in their grades and it is unlikely that these salary payments will recur for the clerical processing staff now at the Research Triangle Park. Another item of decrease is \$35,000 for printing and distributing a physician's handbook on various phases of vital registration. A decrease in personnel compensation above the annual stated rate amounts to \$4,900.

Health interview statistics

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	62	\$544,300	62	\$580,600	-----	+\$36,300
Other expenses.....	-----	1,729,700	-----	1,720,300	-----	-9,400
Total.....	62	2,274,000	62	2,300,900	-----	+26,900

In its eleventh year of operation, the health interview survey of the National Health Survey program is continuing to provide reliable and comprehensive data relating to the health and demographic characteristics of the noninstitutional population of the U.S. By means of a continuing population survey coupled with periodic supplementary surveys, this program has been able to report trend statistics as well as timely data concerning the incidence and prevalence of illness, accidental injuries, disability, and the utilization of medical, dental and hospital services, and related information.

Thirteen reports were issued in 1966, bringing the total reports published by this program to 87. Topics covered during the year included: personal health

expenses; the volume and interval of dental visits; hospital utilization; health status related to occupation; and patient characteristics related to specialized physician services. In addition, a methodological report on a hearing ability interview survey was published and a first report on methods of eliciting information about alcoholism was released. Reports are being prepared on personal health expenditures by families; on the uses and costs of nonprescribed and prescribed medications; health characteristics in relation to smoking habits; and an updating of data on the health of older persons.

In addition to the national data now produced, increased program efforts will be directed to further utilization of the current household interview mechanism to produce data for small areas, such as States and large metropolitan areas, during 1967. Three separate experimental techniques are being employed to develop synthetic estimates of health characteristics by States. In addition, the survey sample has also been expanded to provide health statistics information for 22 metropolitan areas instead of the eight formerly covered.

Part of the present research and data collection is being directed toward the determination of the effects of the Medicare program. The survey is currently gathering information on physicians visits and the use of hospitals and nursing homes for the population of the country 55 years of age and over. Information is also being gathered on the costs of physician visits, hospital and nursing care services, and the utilization of home care services for this segment of the population.

An experimental survey research operation has been established at the Center's data processing laboratory. Its purpose is to pretest questions and new types of questionnaires. Eight interviewers have been employed and presently are conducting household interviews. Among the subject matter areas included in these interviews are the development of a more accurate and more precise way of obtaining disability information and the testing of questions designed to elicit more detail on respiratory conditions. Findings of these pretests will be analyzed and evaluated to develop new procedures for collecting more reliable health data through the household interview technique.

In an effort to measure changes in smoking habits, an annual Current Population Sample supplement will include questions on smoking over the next five or ten years. Over the past two years data have been collected through household interviews on smoking and health. Reports on these data are in preparation and plans are being made to repeat the survey which relates smoking habits and health on a four or five year cycle.

Adjustments to the Health Interview Statistics program include increases of \$38,300 for the annualization of positions approved for 1967. The program has been decreased by \$9,400 for nonrecurring office space rental. A decrease in pay above the annual stated rate amounts to \$2,000.

Health examination statistics

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	77	\$751,900	77	\$749,200	-----	-\$2,700
Other expenses.....		619,000		619,000	-----	
Total.....	77	1,370,900	77	1,368,200	-----	-2,700

The health examination survey of the National Health Survey program provides national statistics on the prevalence of specifically defined medical and dental diseases and on the distribution of certain physical and physiological measurements among the U.S. population. This program is the only source of national morbidity data which includes untreated and previously nonrecognized diseases.

Specific age segments of the population are examined in separate studies known as cycles. As different age groups are studied in successive cycles, new examination procedures are devised and equipment modified so that the total examination process is orderly and obtains a balance of data reflecting the

most significant health problems for the group. Special care is exercised to insure the reliability and validity of the data collected. In all cycles, persons selected as part of the national sample undergo a standardized examination conducted by professional staff members of the Division of Health Examination Statistics at "stands" located within their home communities. Specially equipped mobile examination centers serve as the site for conducting the examination procedures carried out in each survey cycle.

Publications based on the data from the first cycle, concerned with the adult population between 18 and 79 years of age and completed in December 1962, have continued to be released in 1966. Subjects such as hearing levels, coronary heart disease, hypertension and hypertensive heart disease, periodontal disease, oral hygiene, prevalence of osteoarthritis, and weight and age by height have been covered during 1966. Through December 1966 a total of 21 reports on the findings of the first cycle have been released to the public. Additional descriptive material on the plan of the survey, methodological studies and reports on co-operation of respondents have also been released.

The second cycle was concerned with children 6 to 11 years of age. The field program which began in July 1963 was completed in December 1965. Of a pre-selected sample of 7,420 children, 7,129 were examined during the period, resulting in an extraordinary response rate of 96.1 percent. Data obtained from the cycle are being compiled and analyzed and some reports will be prepared for publication during 1967.

The third examination survey cycle has as its target population the non-institutionalized youths, 12 to 17 years of age. It is planned to examine approximately 8,000 youths during the four year period which began in March 1966. The method of sampling and the general plan of data collection, including the use of a mobile examination center, are similar to those used in the first and second cycle operation. However, additional specialized data related to various aspects of childhood growth and development during the adolescent period are being collected and analyzed. The extended length of the third cycle data collection activities has resulted from a reduction in the overall size of the field operations program while broadening the scope of the information obtained. The savings realized from this approach make available additional resources for the analysis and publication of data. This adjustment permits a general leveling of program costs during fiscal years 1967 and 1968, following which slight increases will be required for research and developmental work for the subsequent examination cycle.

The program has been decreased by \$2,700 for salaries above the stated annual rate.

Health records statistics

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	102	\$848,500	102	\$897,300	-----	+\$48,800
Other expenses.....		1,023,800		1,008,800	-----	-15,000
Total.....	102	1,872,300	102	1,906,100	-----	+33,800

The health records survey program encompasses a variety of surveys designed to provide health data on facilities, manpower, and on those segments of the population recently receiving care for health problems. The program produces national statistics and carries out special studies based on information from health and vital records. Comprising the health records survey grouping are four principal subordinate programs: the vital records surveys, the institutional population survey, the hospital discharge survey, and health manpower and facilities.

VITAL RECORDS SURVEYS

The Vital Records Surveys extend the utilization of vital registration certificates through follow-back sample surveys designed to gather demographic, economic, and medical data relating to vital events but not available from the certificates themselves.

Data collection operations are being completed on surveys relating to socio-economic and family characteristics, hospitalization costs, health insurance coverage, and the source of hospital payments for recently deceased persons.

A study of information on the smoking habits of deceased persons has started and will continue through 1968. The decedent smoking survey will supplement health interview survey data on the living population to produce (1) national mortality rates among smokers and nonsmokers, and (2) statistics showing the relative risk of death according to causes of death. The latter appears to be of special interest to public health workers concerned with the relationship between smoking and health.

Development work is underway to investigate the problems of estimating vital statistics and vital rates from data collected in population surveys, as well as the construction of statistical models to develop efficient sample designs for estimating the prevalence of rarely diagnosed diseases in the population.

INSTITUTIONAL POPULATION SURVEY

The Institutional Population Survey program carries out *ad hoc* surveys on the characteristics of residents and care provided in establishments offering medical and personal care. Updating and maintaining a comprehensive inventory of facilities currently providing medical and personal care is a major responsibility of this program.

During the past year, four substantive reports were published and four more are currently being prepared for publication. These reports cover the characteristics of people employed in institutions for the aged and chronically ill, and charges for care among residents of these institutions.

The Master Facility Inventory (MFI) is designed to be a listing of the country's hospitals, nursing homes, and personal or custodial care facilities or establishments from which samples can be drawn. Updating and maintaining the MFI is a continuing process. An Agency Reporting System (ARS) will continuously identify new establishments going into business. Periodic surveys will be made on establishments reported by the ARS and on establishments already in the MFI to (1) determine establishments no longer in business and (2) obtain specific information from those still in business.

HOSPITAL DISCHARGE SURVEY

The Hospital Discharge Survey program conducts a continuing survey of hospital patient records from noninstitutional short-stay hospitals, designed to provide data on levels and trends of morbidity, charges for hospital care, and utilization of hospitals.

With the addition of 225 hospitals during the past year, the total number of hospitals participating in this survey now exceeds 300. Possibly seventy-five more are scheduled for induction during the current year. It is planned to gradually increase the number to about 700, approximately ten percent of the short-stay hospitals in the country.

A report on hospital utilization based upon data collected during the period October–December 1964 has been published. Five additional reports pertaining to nonmedical items based upon discharges during calendar year 1965 are planned for publication and two pertaining to medical items are also planned for publication.

A pilot study is being conducted, under contract, to develop procedures and forms to be used in the Hospital Discharge Survey and to collect information on hospital charges by type of service and by source of coverage.

Another developmental study, under contract, is being conducted to explore ways to improve medical information being abstracted from patient medical records in the Hospital Discharge Survey.

HEALTH MANPOWER AND FACILITIES

This program conducts statistical studies to determine the number, geographic location, and characteristics of persons in various health occupations and of facilities providing health care and health service of various types. Also, it coordinates the collection of data gathered through established programs of the Center concerning facilities which provide medical, nursing, domiciliary, and other types of health care. The coverage will be extended to include new sources such as medical laboratories, blood banks, out-patient clinics and other local

health facilities. Inclusion of these new sources will enable the Center to obtain data that will provide a more complete picture of the total health resources of the Nation.

During 1967 the first comprehensive report on health manpower resources will be published. This report assembles basic statistics on each of approximately 150 health professions and occupations grouped into 34 categories. Topics discussed are occupational duties, the current labor force by State, employment trends, and, where appropriate and available, information on the type of practice or specialization. Also included are statistics on educational requirements, number of schools, students, and graduates, and the location of schools offering formal programs.

An expansion of the manpower resources activity is currently underway which will permit the Center to explore new sources of manpower data, develop and evaluate systems for obtaining such data on a periodic basis, and plan for the collection and analysis of the detailed characteristics and utilization of manpower on a sampling basis.

Adjustments to the Health Records Statistics program include an increase of \$51,900 for the annualization of positions approved for 80 percent of 1967. The program has been decreased by \$15,000 for nonrecurring office rental and \$3,100 for personnel compensation above the annual stated rate.

Health statistics analysis

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	19	\$191,400	19	\$190,700	-----	-\$700
Other expenses.....		76,000		31,000	-----	-45,000
Total.....	19	267,400	19	221,700	-----	-45,700

The Health Statistics Analysis program carries out "in-depth" analyses of vital and health statistics from a variety of sources and in much greater depth than is possible in the topical presentations of the more production-oriented statistical programs of the Center. It brings together data from widely selected sources to explain health related phenomena. In addition, this program provides guidance to public health programs on problems associated with disease classification and coordinates national proposals for the revision of the International Classification of Diseases.

During 1966 comprehensive studies leading to international comparisons of perinatal and infant mortality rates were completed; these reports are being prepared for publication and will be printed in 1967. A comparative study of infant mortality rates in countries of low mortality was completed also.

A major project presently underway is the development of a health index suitable for measuring the state of the Nation's health. As a significant step in this program, a study of conceptual problems in preparing the index has been completed and published. Other projects include an analytical study of general mortality trends in Scandinavian countries; a study of infant mortality in the United States, based on medical, infant death and birth records, to provide additional information on the infant mortality problem not available from the annual statistics; and an evaluation of the quality of information reported on death certificates as compared with the corresponding data on census enumeration schedules.

During the months ahead this Office will be heavily committed to the development of an adaptation of the International Classification of Diseases suitable for hospital indexing and for hospital morbidity and mortality coding purposes. A simplification of coding procedures for identifying the underlying cause of death is already under study, along with the development of multiple cause coding procedures to meet the implementation date of January 1, 1968. The Office also is collaborating in the development of data for use in courses of instruction to train Center and State personnel and procedures for coding causes of death and causes of morbidity.

The Health Statistics Analysis program has been decreased by \$45,000 for nonrecurring costs associated with the adaptation of the decennial listing of the International Classification of Diseases to meet the needs of the United States. Another decrease of \$700 relates to personnel compensation above the stated annual rate.

Professional and technical assistance

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	20	\$221,700	20	\$224,000	-----	+\$2,300
Other expenses.....	-----	75,500	-----	77,900	-----	-600
Total.....	20	300,200	20	301,900	-----	+1,700

The professional and technical assistance program includes a variety of functions designed to maintain and improve vital and health statistics throughout the Nation. Since national vital statistics are dependent upon each State vital statistics office, primary emphasis is placed on maintaining effective working relationships and assisting the State offices. The principal mechanism used for these purposes is the Public Health Conference on Records and Statistics, through which a continuing series of studies of practical problems are conducted by study groups. A national conference is held every two years. In June 1966 a highly successful conference, attended by approximately 335 professional workers from State and local areas, universities and the Federal Government, was held and many problems and matters of mutual concern were discussed and either resolved or made a part of a program for further study. Training institutes for State health statistics personnel are given on an occasional basis to develop additional skills. Direct technical and consultative assistance is furnished the State offices for particular problems on the basis of State requests.

Increasing amounts and numerous varieties of professional and technical assistance will continue to be provided to State vital and health statistics departments during 1967. In addition, this program will continue to seek to enhance the whole profession of biostatistics through close working relationships with universities and other institutions throughout the United States.

Adjustments to the Professional and Technical Assistance program include an increase of \$3,100 for the annualization of positions approved for 1967. The program has been decreased by \$600 for nonrecurring office space rental and \$800 for personnel compensation above the stated annual rate.

Special evaluative statistical studies

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	-----	-----	10	\$91,500	+10	+\$91,500
Other expenses.....	-----	-----	-----	908,500	-----	+908,500
Total.....	-----	-----	10	1,000,000	+10	+1,000,000

The National Center for Health Statistics has traditionally provided mortality and morbidity statistics for the entire health community. One of the important uses to which these data have been put is the evaluation of public health programs on a nationwide basis. However, it is now evident that there is a need for a series of statistical studies intended for a more direct and specific evaluation of Federal program efforts at the State or local levels.

This evaluation activity will be carried on in close collaboration with other parts of the Public Health Service, particularly the Office of Program Planning and Evaluation in the Office of the Surgeon General. It will involve a series of in-depth studies of changes in the health status of specific population groups

attributable to identified inputs of health efforts. It is intended that these studies will be conducted primarily by private organizations under contract with the Public Health Service. Some examples of the types of studies to be supported are:

1. The relationship of changes in the health status of the elderly (preventable disability, ameliorable conditions, etc.) to their source of health care (private practitioner vs. clinic vs. organized home health services program, etc.).

2. Measurement of improvements in the health status and continuing health needs of population served by urban neighborhood health centers in areas with multiple problems.

3. Health services and the health status of the poor. A comparison of the health status and the accessibility of health services for persons living in a sample of the 193 "poverty areas" with persons living in other areas of the U.S. A comparison of the health and the access to services for persons at different income/poverty levels within selected poverty areas to test whether the arbitrary "under \$3,000" income cutoff circumscribes a homogeneous poverty group or a variety of poverty groups with health problems varying from sub-group to sub-group. The 193 poverty areas have been identified for the Office of Economic Opportunity by the Census Bureau.

4. Assessment of the incidence and prevalence of various types of kidney disease, in early as well as late stages within a specified population, as a basis for assessing the best mix of case finding, preventive, early treatment and heroic treatment activities on behalf of the given population. Similar studies should also be made on other major chronic disease problems such as heart disease.

5. A comparison of health services, environmental sanitation and nutritional status for families living in areas of high infant mortality, as opposed to those living in areas of low infant mortality. Where possible, relating the differences in the incidence of child morbidity and child mortality to the presence or absence of specific health services.

6. A prospective study of variations in acute and chronic respiratory disease rates associated with areas of high and moderate air pollution levels. The development of effective morbidity as well as mortality measures for assessing the effects of air pollution abatement efforts.

A total of ten new positions and \$1,000,000 are requested in 1968 for this program.

New positions requested, fiscal year 1968

	Grade	Annual salary
Vital statistics:		
Statistician.....	GS-15	\$17,550
Statistician (2).....	GS-14	30,212
Statistician (2).....	GS-13	25,746
Do.....	GS-12	21,854
Systems analyst.....	GS-12	10,927
Computer programmer (2).....	GS-12	21,854
Statistician (3).....	GS-11	27,663
Computer programmer (2).....	GS-11	18,442
Statistician (3).....	GS-9	23,088
Illustrator.....	GS-9	7,696
Coding supervisor.....	GS-7	6,451
Statistician.....	GS-7	6,451
Editor.....	GS-7	6,451
Administrative assistant.....	GS-7	6,451
Assistant coding supervisor.....	GS-6	5,867
Coding clerk (19).....	GS-5	101,289
Statistical clerk.....	GS-5	5,331
Secretary (2).....	GS-5	10,662
Clerk-typist (2).....	GS-4	9,552
Coding clerk (5).....	GS-4	23,880
Subtotal (53).....		387,417
Special evaluative statistical studies:		
Statistician (2).....	GS-14	30,212
Statistician (3).....	GS-13	38,619
Statistician (2).....	GS-11	18,442
Statistician.....	GS-9	7,696
Secretary (2).....	GS-5	10,662
Subtotal (10).....		105,631
Total new positions, all activities (63).....		493,048

GENERAL PURPOSE STATISTICAL ORGANIZATION

Senator HILL. The subcommittee will kindly come to order.

Dr. Linder, will you take the stand, please, sir.

Glad to have you here, sir. We are happy to have you proceed in your own way.

Dr. LINDER. Mr. Chairman and members of the committee, it is a pleasure to appear before you to discuss the requested 1968 appropriation of the National Center for Health Statistics. Before doing so, however, I would like to provide you with some background information about the organization I represent.

The National Center for Health Statistics is one of four general purpose statistical organizations of the Government. The others are the Bureau of the Census, the Bureau of Labor Statistics and the Statistical Reporting Service of the Department of Agriculture. The National Center for Health Statistics is by a large margin the smallest of these, there being 507 positions proposed for it in the budget request you are now considering.

HEALTH STATISTICS COLLECTION AND PUBLICATION

I would describe the mission of the National Center for Health Statistics as being to provide reliable national health statistics of a descriptive character, on a continuing basis for the use of the health community, both public and private. Very briefly, we collect and publish health statistics of four types: Direct measures of health, such as mortality and morbidity; measures of people's use of services, such as doctor visits and hospital use; measures of health resources, such as physicians, pharmacists, hospital beds, and nursing home beds; and certain basic demographic data, such as births, marriages and divorces.

CLIENTELE AND ORGANIZATION

Our clientele includes, of course, the executive and legislative branches of the Federal Government, but also State and local governments, universities, and a wide variety of private businesses.

To fulfill its mission, the Center is organized into six divisions and seven offices. Its mechanisms for data collection include, in the case of vital statistics, a most successful and satisfying example of Federal-State cooperation.

POLICIES

I believe you may be interested in three of the fundamental policies governing activities of the Center. The first of these is a strict requirement covering the confidentiality of our data. In keeping with a pledge given to those who supply information to us, we never release such information in a form that would allow identification of individuals.

Second, we insist upon scientific objectivity in our activities. The National Center for Health Statistics publications report what the existing situation is; they never attempt to suggest what it should be or what social programs or corrective action should be attempted. One example of the recognition earned by this policy was an approving resolution passed on June 24, 1964, by the house of delegates, American Medical Association.

And third, the collected and analyzed data must be communicated to our users. We feel that we make no contribution until we have identified those who need our information and have made it available to them, and strong emphasis is placed on this purpose.

BUDGET REQUEST

Turning now to the appropriation for 1968, I believe it represents advances in three principal categories. These reflect demands which fall upon the Center in support either of health programs and research or improved planning processes and management practices in the Public Health Service.

INTERNATIONAL CLASSIFICATION OF DISEASES

The first category is associated with the recent revision of the International Classification of Diseases by the World Health Organization. This classification represents the basic international standard which makes it possible to compare the health experience of America with that of other advanced countries of the world.

The new classification which goes into worldwide use in 1968 is designed to facilitate more complete use of medical information which doctors write on some 1.7 million death certificates in the United States each year. Heretofore, it has been necessary to discard 60 percent of these valuable health data because we had to select—sometimes arbitrarily—a single cause for each death. Since mortality now results increasingly from chronic diseases or a complex of conditions, data based on a single cause of death are misleading and wasteful.

MORTALITY MULTIPLE-CAUSE ANALYSIS

We intend a multiple-cause analysis which will correct this deficiency and which will permit evaluation of interrelationships between the principal cause and other conditions which are contributing causes of death. This analysis will provide a new perspective to mortality problems and will enhance the value of analytical data provided to public health programs and medical researchers who seek means to control such leading killers as heart disease, cancer, and stroke.

The value of this approach has always been recognized, but its cost has been considered prohibitive in the past. Now, however, the computer makes the effort economically feasible, and it is essential that this new method start in 1968 with the adoption of the revised International Classification of Diseases.

FAMILY GROWTH SURVEY

The second area of program emphasis involves a survey of family growth. The world is increasingly concerned with rapid population increase. Some nations regard it as a menace which threatens their economic progress. In our own country we recognize it as a crucial element in our social and economic development.

The essential unit of population growth is, of course, the family but surprisingly little is known about the family and particularly about the dynamics of its growth.

We propose to explore the latter area and to attempt to answer such questions as: In which segments of our population is growth most rapid? Why? What are the implications of this growth in terms of the Nation's health? Its social problems? Its economy? What causes the wide fluctuations we have been seeing in the birth rate—the rapid rise, for example, in the late 1940's and the unexpectedly sharp decline in the mid-1960's? Can such fluctuation be predicted?

NATIONWIDE HOUSEHOLD INTERVIEW SURVEY

Health and welfare programs, educators, economists and many business groups are keenly interested in the answers to these questions. We propose a nationwide household interview survey conducted frequently enough to provide reliable trend information and flexible enough to explore the implications and interrelationships of the data. Although up to now we have had very little information on family growth and factors related to it, I can say that there is no area of health statistics that receives as much public interest as this.

Senator HILL. Or as much in the press and magazines as this?

Dr. LINDER. Precisely.

HEALTH PROGRAMS EVALUATION

Enactment of the Comprehensive Health Planning and Public Health Service Amendments of 1966 inaugurated a new era in inter-governmental planning for public health. At about the same time, the Public Health Service began to develop its system for long-range projection of health program goals. A necessary corollary of both these efforts is a continuous and comprehensive evaluation of health programs to determine progress toward their goals.

A series of statistical studies will serve as the basis of this evaluation. Funds are included here because of the statistical relationship of these studies to the mission of the National Center for Health Statistics and because the Center's continuing statistical output will also be used in program evaluation. This evaluation, leading to related judgments as to program progress and recommendations for detailed planning, will heavily involve appropriate units within the Office of the Surgeon General and the operating bureaus of the service.

Senator HILL. You will have to have the cooperation of many of them; will you not?

Dr. LINDER. Yes, sir; this will be a cooperative effort, based on this amount.

1967 APPROPRIATION AND 1968 BUDGET REQUEST

The total budget estimate for National Health Statistics for 1968 is \$9,767,000, representing a net increase of \$487,000 over the 1967 appropriation. This amount reflects program and mandatory increases of \$1,763,800 offset by nonrecurring costs from 1967 of \$1,276,800.

Senator HILL. What are the nonrecurring costs?

Dr. LINDER. Mostly involved with the money we received last year for the purchase of a computer.

Senator HILL. You will not have that expense this year then?

Dr. LINDER. That is correct.

Thank you, Mr. Chairman.

Senator HILL. Let me ask you one other question, then.

Without that expense, how much increase will you really have in your funds this next year, fiscal year 1968, over the present fiscal year 1967?

Dr. LINDER. Well, the net increase is \$487,000.

Senator HILL. I know, but—

Dr. LINDER. And if you take into account the nonrecurring cost, the total increase requested for mandatory and program items is about \$1,763,000.

Senator HILL. \$1,763,000?

Dr. LINDER. That is correct.

Senator HILL. Where will most of that go?

PROGRAM AND MANDATORY INCREASES

Dr. LINDER. Most of that money is distributed in this general way: \$220,600 is for the improvements that we will be making in the classification of causes of death and particularly the moving to a multiple-cause type of tabulation rather than a single-cause type of tabulation; about \$410,000 will go for the investigations and surveys related to family growth; and \$1 million of it will be for the evaluation studies which we propose to start next year.

EVALUATION STUDIES

Senator HILL. You have not had those in the past?

Dr. LINDER. This is a new item.

Senator HILL. This is a new item.

Dr. LINDER. Yes.

Senator HILL. So it will pretty much take in most of your programs, will it not, most of your public health programs?

Dr. LINDER. Evaluation?

Senator HILL. Evaluations, yes.

Dr. LINDER. This would intend to be a fairly comprehensive set of evaluation studies.

Senator HILL. Where you have both Federal funds or State and local funds; is that correct?

Dr. LINDER. That is right.

Senator HILL. You get a better picture of those programs and the operation; is that right?

Dr. LINDER. This would be intended to make studies of the effectiveness of public health programs at the Federal, State, and local levels, and attempting to get an actual expression of the amount of benefit that is received from a certain amount of investment put into the program.

Senator HILL. As to what the returns are, so to speak.

Dr. LINDER. We hope to be able to put it in these hardheaded terms of how much dollar benefit you get back from so much dollars put into this kind of program or this other kind of program.

Senator HILL. I see.

Dr. LINDER. This will be a difficult thing to do.

Senator HILL. It will not be easy, will it?

Dr. LINDER. It is going to be very hard to put this on a quantitative basis, but it is our feeling that this approach has to be made, this problem has to be faced, and the time to start it is now.

Senator HILL. I think you are right; I would commend you.

I want to thank you very much for your statement. Thank you, Doctor; thank you, sir.

NATIONAL LIBRARY OF MEDICINE

STATEMENT OF DR. MARTIN M. CUMMINGS, DIRECTOR; ACCOMPANIED BY SCOTT ADAMS, DEPUTY DIRECTOR; DR. MARJORIE P. WILSON, ASSOCIATE DIRECTOR, EXTRAMURAL PROGRAMS; AND JAMES D. ISBISTER, EXECUTIVE OFFICER, NATIONAL LIBRARY OF MEDICINE; DR. WILLIAM H. STEWART, SURGEON GENERAL; G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER, PUBLIC HEALTH SERVICE; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

NATIONAL LIBRARY OF MEDICINE

To carry out section 301 of the Act and for expenses, not otherwise provided for, necessary to carry out the National Library of Medicine Act (42 U.S.C. 275), and the Medical Library Assistance Act of 1965 (79 Stat. 1059), **[\$20,192,000]** \$21,162,000, of which **[\$13,800,000]** \$6,500,000 shall remain available until June 30, **[1968]** 1969.

Amounts available for obligation (new obligational authority basis)

	1967	1968
Appropriation.....	\$20,192,000	\$21,162,000
Comparative transfer from "Office of the Surgeon General, salaries and expenses".....	62,000	-----
Total.....	20,254,000	21,162,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants:						
Research.....		\$1,000,000		\$1,400,000		+\$400,000
Training:						
Training grants.....		1,000,000		1,000,000		-----
Special scientific projects.....		120,000		100,000		—20,000
Construction.....		7,500,000		5,000,000		—2,500,000
Publications and library support.....		2,935,000		2,800,000		—135,000
Regional medical libraries.....		200,000		1,500,000		+1,300,000
Total, grants.....		12,755,000		11,800,000		—955,000
Direct operations:						
Library operations.....	357	5,674,000		7,861,400	399	+2,187,400
Research and support contracts.....		1,045,000		700,000		—345,000
Review and approval of grants and contracts.....	40	715,000		800,600	48	+85,600
Total, direct operations.....	397	7,434,000		9,362,000	447	+1,928,000
Total obligations.....	397	20,189,000		21,162,000	447	+973,000
Unobligated balance, reserve.....		65,000				—65,000
Total, obligations and balance.....	397	20,254,000		21,162,000	447	+908,000

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Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	397	447	+50
Full-time equivalent of all other positions.....	6	12	+6
Average number of all employees.....	355	397	+42
Personnel compensation:			
Permanent positions.....	\$2,841,700	\$3,355,300	+\$513,600
Positions other than permanent.....	54,000	123,000	+69,000
Other personnel compensation.....	10,500	30,500	+20,000
Total personnel compensation.....	2,906,200	3,508,800	+602,600
Personnel benefits.....	224,000	266,400	+42,400
Travel and transportation of persons.....	115,600	186,200	+70,600
Transportation of things.....	7,500	12,500	+5,000
Rent, communications, and utilities.....	179,050	277,850	+98,800
Printing and reproduction.....	272,350	327,950	+55,600
Other services.....	80,700	163,900	+83,200
Project contracts.....	2,677,800	3,305,200	+627,400
Services of other agencies.....	134,000	138,000	+4,000
Payment to "National Institutes of Health management fund".....	658,200	743,200	+85,000
Supplies and materials.....	109,800	155,800	+46,000
Equipment.....	368,800	276,200	-92,600
Grants, subsidies, and contributions.....	7,788,828	19,500,000	+11,711,172
Total obligations by object.....	15,522,828	28,862,000	+13,339,172

Summary of changes

(New Obligational Authority Basis)

1967 enacted appropriation.....	\$20,192,000
Comparative transfer, from "Office of the Surgeon General, Salaries and Expenses".....	62,000
Unobligated balance, reserve.....	-65,000
1967 total estimated obligations.....	20,189,000
1968 estimated obligations.....	21,162,000
Total change.....	973,000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
Increases:				
A. Built-in: 1. Annualization of 22 positions new in 1967.....				\$64,800
B. Program:				
1. Research and development.....		\$1,000,000		400,000
2. Regional medical libraries.....		200,000		1,300,000
3. Medlars indexing and searching.....	42	517,192	11	259,200
4. MeSH development.....	8	93,808	1	80,900
5. New computer system installation and research.....	1	154,000	8	974,900
6. Executive direction and administration.....			1	138,000
7. Program analysis.....			1	52,800
8. Review and approval of grants and contracts.....	40	715,000	8	85,600
9. Toxicology information exchange.....			20	900,000
Total program increases.....			50	4,256,200
Decreases:				
A. Nonrecurring items of cost:				
Equipment.....				-241,000
Rental of office space.....				-30,000
Extramural contracts.....				-345,000
B. Pay above stated annual rate in 1967.....				-12,200
C. Publications and library support.....		2,935,000		-135,000
D. Construction grants.....		7,500,000		-2,500,000
E. Special scientific projects.....		120,000		-20,000
Total decreases.....				-3,283,200
Total net changes requested.....			+50	+973,000

EXPLANATION OF CHANGES

Research and development grants

An increase of \$100,594 will bring the total for this program up to \$1,400,000 for 1968 which will provide for approximately twenty-eight grants to improve the distribution of documents, bibliographic materials, and information to health scientists and practitioners.

Construction grants

An increase of \$12,500,000, composed of \$7,500,000 carryover of 1967 funds plus \$5,000,000 requested as new obligational authority in 1968, will support approximately thirteen construction projects.

Regional medical libraries

An increase of \$1,300,000 for a total of \$1,500,000 will support seven institutions in 1968.

Publications and library support

An increase of \$65,000 for a total of \$300,000 in 1968 for support of publications and a decrease of \$2,176,002 leaving a total of \$2,500,000 for library resources will result in a net decrease of \$2,111,002. The reduced amount will support 290 awards.

Training

A decrease of \$86,496 in special scientific projects and an increase of \$8,076 for support of training will result in a net decrease of \$78,420. The reduced amount will support two special scientific projects and twenty training grants.

MEDLARS indexing and searching

An increase of \$259,200 and eleven positions will enable the Library to increase intramural indexing and searching and to contract for the indexing of biomedical literature to reduce the backlog.

MeSH development

An increase of \$80,900 and one position is necessary to improve the quality, scope, and level of sophistication of Medical Subject Headings, giving particular attention to biochemical mechanisms and biomedical engineering.

New computer system

An increase of \$974,900 and eight positions is required to complete planning for a second-generation MEDLARS, provide systems analysis staff for expanding programs of increasing complexity, and conduct a program of intramural research.

Executive direction and administration

An increase of \$138,000 and one position will permit the Library to establish a contract management office and to strengthen other administrative management operations.

Program analysis

An increase of \$52,800 and one position is necessary for intramural analysis and to hire consultants for program evaluation.

Review and approval of grants and contracts

An increase of \$85,600 and eight positions will provide the scientific expertise required to conduct the diverse program of medical library assistance and will provide a grants management and processing staff.

Toxicology information exchange (TIE)

An increase of \$900,000 and twenty positions is required to begin planning of this new program by data gathering and analysis of toxicological information sources and user needs, and to hire top-level management staff, analysts, and program specialists.

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Direct operations and grants

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	397	\$3,130,200	447	\$3,775,200	+50	+\$645,000
Other expenses.....		12,392,628		25,086,800		+12,694,172
Total.....	397	15,522,828	447	28,862,000	+50	+13,339,172

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Medical library assistance, grants and contracts:						
Research and development:						
Grants.....		\$1,299,406		\$1,400,000		+\$100,594
Contracts.....		800,000		200,000		-600,000
Total, research and development.....		2,099,406		1,600,000		-499,406
Training:						
Grants.....		1,191,924		1,200,000		+8,076
Special scientific projects.....		186,496		100,000		-86,496
Total, training.....		1,378,420		1,300,000		-78,420
Construction grants.....				12,500,000		+12,500,000
Publications and library support:						
Publications:						
Grants.....		235,000		300,000		+65,000
Contracts.....		545,000		500,000		-45,000
Total, publications.....		780,000		800,000		+20,000
Library resources: Grants.....		4,676,002		2,500,000		-2,176,002
Total, publications and library support.....		5,456,002		3,300,000		-2,156,002
Regional medical libraries: Grants.....		200,000		1,500,000		+1,300,000
Subtotal, extramural grants and contracts.....		9,133,828		20,200,000		+11,066,172
Direct operations:						
Library operations.....	357	7,019,000	399	8,561,400	+42	+1,542,400
Less contracts, included above.....		-1,345,000		-700,000		+645,000
Intramural library operations.....	357	5,674,000	399	7,861,400	+42	+2,187,400
Review and approval of grants and contracts.....	40	715,000	48	800,600	+8	+85,600
Total, National Library of Medicine.....	397	15,522,828	447	28,862,000	+50	+13,339,172

Introduction

The biomedical knowledge of the world is recorded in a wide variety of forms and languages at an ever increasing rate of volume and complexity. The institutions and mechanisms which exist to collect, organize, and disseminate biomedical information are outmoded and inadequate. As a result the potential value of existing biomedical knowledge is not fully realized in health research, education, and practice.

The goals of the National Library of Medicine programs are to assist the advancement of medical and related sciences through the conduct and support of programs which improve the flow of biomedical information from the point of

generation to the ultimate user for the purposes of research, education, and medical practice and thus contribute to bringing the latest advances in health care ultimately to the patient. NLM assists in strengthening biomedical libraries and related institutions, exploiting current interlibrary relationships, improving information handling techniques, and enhancing the role of libraries as learning resources.

The 1968 budget request includes funds for awards in all categories of support authorized under the Medical Library Assistance Act of 1965 to assist in the development and support of the Nation's biomedical information resources. Increases are requested for research in medical library science and information systems and techniques, and development of regional medical libraries.

In order to strengthen the Library's ability to meet increased demands for service, the budget contains increases to plan and develop a toxicology information exchange; conduct systems design and provide partial staffing of a new computer system; accelerate the development of NLM's medical literature analysis and retrieval capability to keep pace with the growing body of literature and demand for computer-based bibliographic services; improve medical subject headings; strengthen executive direction and administration; conduct a program analysis activity; and increase the staff to administer the expanding extramural program.

Medical library assistance, grants

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants.....		\$7,788,828		\$19,500,000		+\$11,711,172

The 89th Congress recognized that the unprecedented expansion of knowledge in the health sciences within the past two decades has caused massive growth in the quantity, and major changes in the nature of, biomedical information. In enacting the Medical Library Assistance Act of 1965, the Congress noted that there has not been a corresponding growth in the facilities and techniques necessary to coordinate and disseminate the ever increasing volume of knowledge and information which has been developed in the health science field, and, that much of the value of this ever-increasing volume of knowledge will be lost unless the proper measures are taken in the immediate future to develop facilities and techniques necessary to collect, preserve, store, process, retrieve and facilitate the dissemination and utilization of such knowledge and information.

The Medical Library Assistance Act provides for a comprehensive program of support through:

(1) grants and contracts for research in the field of medical library science and related activities and development of new techniques, systems, and equipment for processing, storing, retrieving and distributing information in the sciences related to health;

(2) grants for training of medical librarians and other information specialists in the health sciences;

(3) grants for special scientific projects conducted under special fellowships awarded to physicians, scientists, and other practitioners in the sciences related to health, which will facilitate the distribution and utilization of knowledge and information relating to scientific, social, and cultural advances in sciences related to health;

(4) grants for construction of new, and the renovation, expansion, or rehabilitation of existing medical library facilities;

(5) grants for improving and expanding the basic resources of medical libraries and related facilities;

(6) grants and contracts for financial support of biomedical scientific publications;

(7) and, grants for development of a national system of regional medical libraries each of which would have facilities of sufficient depth and scope to supplement the services of other medical libraries within the region served by it.

Research and development

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Grants.....		\$1,299,406		\$1,400,000		+\$100,594

Research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number of awards	Amount	Number of awards	Amount	Number of awards	Amount
Noncompeting continuations.....	17	\$455,406	17	\$740,000		+\$284,594
New grants.....	19	\$44,000	11	660,000	-8	-184,000
Total.....	36	1,299,406	28	1,400,000	-8	+100,594

The Library requests a net increase of \$100,594 to support research and development projects in 1968. The total amount of new obligational authority requested for this sub-activity is \$1,400,000. Obligations in 1967 consist of \$1,000,000 in new obligational authority plus \$299,406 brought forward from 1966.

The support of research and development in medical library science and related fields is based on the premise that the information resources of the Nation's biomedical libraries must be made available to its health practitioners, scientists, and students in the forms, volume, and with the speed required to meet users' needs for relevance, specificity, and timeliness.

Evaluation of research and development projects must consider the time available to the physician and other users to find, digest, and evaluate medical information: the unique communication requirements of the medical community; and the potential benefit to the health of the people of timely, pertinent, and reliable information. Research and development approaches to solutions of biomedical information problems involve three basic steps: 1) identification of user motivation and requirements through exploration of the preferences for different methods of information assimilation and identification of information gathering methods; 2) technical development of terminology, nomenclature, classification, and linguistics for the solution of traditional problems in indexing, abstracting, translation, and search strategy, and development of new media; and, 3) synthesis of the findings of behavioral and technical research.

The NLM is currently supporting research projects in each of the three broad areas outlined above. Program plans for 1967 emphasize the support of projects defined above as critical to the whole process: namely, the behavioral aspects of the information gathering process. During 1968, the Library will continue to support research in these three major areas but will emphasize studies for improving the techniques of information acquisition, organization, processing, preservation, and retrieval and the integration of behavioral and technological research efforts into effective communication systems.

The NLM also awards grants for projects in the history of the life sciences with special reference to the history of medicine. By preserving and illuminating the historical record, these projects provide the potential for a better understanding and appreciation of contemporary health activities.

Training

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Total grants.....		\$1,378,420		\$1,300,000		-\$78,420

This sub-activity includes grants for training and special scientific projects. The net decrease of \$78,420 for 1968 consists of an increase of \$8,076 in training offset by a decrease of \$86,496 for special scientific projects.

A. Training

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Grants.....		\$1,191,924		\$1,200,000		+\$8,076

	1967 estimate		1968 estimate		Increase or decrease	
	Number of awards	Amount	Number of awards	Amount	Number of awards	Amount
Non-competing continuations.....	9	\$526,924	20	\$1,200,000	+11	+\$673,076
New grants.....	11	665,000			-11	-665,000
Total.....	20	1,191,924	20	1,200,000		+\$8,076

The Library requests an increase of \$8,076 in 1968 to award training grants. This will result in a total obligational authority of \$1,200,000 in 1968 composed of \$200,000 brought forward from 1967 plus \$1,000,000 in new obligational authority (the amount of yearly authorization in the Medical Library Assistance Act). The 1967 base of \$1,191,924 is composed of \$191,924 brought forward from 1966 plus \$1,000,000 in new obligational authority. \$200,000 must be carried forward from 1967 to 1968 in order to meet non-competing continuation commitments.

The success of a national health science information system is dependent upon the availability of a national manpower resource skilled in information communication techniques. In the United States and Canada, of the 2,188 graduates from the 36 accredited library schools in 1963, 1,839 were identifiable as known placements. Of these, 24 were placed in medical libraries and 13 in hospital libraries. It is not known how many of these had specific training in medical librarianship.

Serious as the quantitative problems are, simply adding more schools which offer a course in medical bibliography will not solve the infinitely more far-reaching problems. Training programs are needed which go beyond the basic traditional training in library science and provide the student with an educational experience that combines theoretical depth with research or practical experience all directly related to the problems of medical science. Rapid retrieval of drug information, continuing education of the physician, provision of regional medical services, library backup for specialized information centers such as those in Parkinsonism, brain research, diabetes, and cardiovascular disease are the types of services needed. With the growing concept of the learning resource center in the medical complex, the medical library will no longer be limited to books and journals but will be responsible for the newer instructional media.

B. Special scientific projects

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Grants.....		\$186,496		\$100,000		-\$86,496

The Library requests \$100,000 to support approximately 6 Special Scientific Projects in 1968. Obligations in 1967 consist of \$120,000 in new obligational authority plus \$66,496 brought forward from 1966, to bring total obligations in 1967 to \$186,496.

Special scientific projects are awarded on behalf of individuals to compile existing data and to make original contributions to the literature on the scientific, social, and cultural advances in the health sciences.

In 1967, particular attention will be directed toward studies on the contributions of contemporary health practitioners and the drug information system in the United States. In 1968, programs in one or two selected medical environments will be designed to foster an awareness in the medical community of the social and cultural aspects of the health sciences.

Construction

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Grants.....	-----	-----	-----	\$12, 500, 000	-----	+\$12,500,000

The \$5,000,000 requested for construction in 1968, when combined with the \$7,500,000 carried over from 1967 will make a total of \$12,500,000 available for obligation in 1968. This grant support will provide up to 75% of the costs of constructing, renovating, expanding or remodeling biomedical library facilities in medical schools, and other health profession or service institutions.

The Association of American Medical Colleges has reported that a survey conducted in 1964 showed that its member institutions required more than \$87,000,000 for medical library construction and renovation. This sum represents about \$65,000,000 in Federal funds when the 75 percent matching rate as allowed in the Medical Library Assistance Act of 1965 is applied. The survey did not take into account the needs of free-standing health science libraries and those in other health professions educational institutions which are estimated to require an additional \$10,000,000 in Federal funds.

A 1964 study by the Association of American Medical Colleges provided qualitative data for the establishment, operation, support and functions of libraries in medical schools. The Library contracted with the same organization in 1966 to develop criteria and planning guidance for the construction of medical libraries. The new study devotes special attention to the role of the medical library as a learning resource, considering facilities for use and dissemination of audio-visual and other non-print material.

The information from the 1966 study supplemented by the criteria reported in the 1964 study provides guidelines for effective implementation of the medical library construction grant program.

To date, eleven construction grant applications have been submitted and are under review. Funds carried over from 1967 plus the 1968 appropriation will fund approximately thirteen projects in 1968. These projects will include the cost of original construction or the renovation, expansion or remodeling of biomedical library facilities in non-profit health institutions. In reviewing applications for construction grants, consideration will be given to the relative effectiveness of the proposed facilities in meeting demonstrated needs for additional or improved medical library services.

Publications and library support

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Grants.....	-----	\$4, 911, 002	-----	\$2, 800, 000	-----	-\$2, 111, 002

This subactivity includes grants for publications support and for library resources. A net decrease of \$2,111,002 for 1968 results from a requested increase of \$65,000 for publication support, offset by a decrease in the library resource grant program of \$2,176,002. These programs are discussed separately below:

A. Publications support

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Grants.....		\$235,000		\$300,000		+\$65,000

The Library provides financial assistance for non-profit biomedical publications to make available to the health related professions information of significance to the national health effort. To facilitate the utilization and availability of health science information, support must be provided for the preparation of abstracts, bibliographies, translations, handbooks, indexes, and secondary biomedical publications. In addition, primary or secondary publications in the field of medical librarianship and related areas of information science are supported. Assistance is provided to periodical publications in need of temporary support for the expansion or improvement of services to the readers.

During 1967, the Library will continue to identify information gaps in certain subject matter areas and provide special assistance such as abstracting projects to meet the identified need. Also, an evaluation of the utility and effectiveness of those publications being supported currently will continue.

In 1968, a special effort will be directed toward studies of the availability, dissemination, and usefulness of existing and planned translation services. By this effort, the Library seeks to improve its contribution to international communication through the improved and increased exchange of recorded scientific information.

For these purposes, the Library requests an increase of \$65,000 in 1968.

B. Library resources

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Grants.....		\$4,676,002		\$2,500,000		—\$2,176,002

A total of \$2,500,000 is requested for this program in 1968. This represents a decrease from 1967 of \$2,176,002 in obligational authority. Obligations in 1967 consist of \$2,700,000 in new obligational authority plus \$1,976,002 brought forward from 1966.

Grants will be made to improve and expand medical library resources which may be used to: strengthen collections through the purchase of books, journals, and other informational resources; improve access to the holdings of libraries by providing support for cataloging, binding, and other processing services; introduce new techniques in health service librarianship; and acquire photo-duplication devices, film projectors, microfilm readers, and other needed equipment.

While the specific amount of each resource grant is determined by a formula, the basis for approval will be the merit of the plan set forth for the provision of services utilizing the resources to be obtained with the grant. Before awarding such grants the scope of services provided and planned by the medical library will be examined and numbers of users who will require services will be considered. The services and resources of the applicant, both existing and proposed, will be reviewed in the context of the geographic area served by the library along with those of other libraries in the area. In this way, planning for total coverage by library services will be stimulated at all interrelating levels, viable libraries will be identified and strengthened, and library service can be generated for user groups not adequately covered previously.

A guiding principle of the resource grant program is to provide a means for optimizing materials and techniques which are available. A further guiding

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principle in the planning of this program has been to reach as large a number as possible of libraries capable of providing useful and necessary service.

The NLM plans to award grants to 200 libraries in 1967. The \$2,500,000 requested in 1968 will provide grants to an additional 75 libraries.

Regional medical libraries

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Grants.....		\$200, 000		\$1, 500, 000		+\$1, 300, 000

The Library requests \$1,500,000, an increase of \$1,300,000 over the 1967 amount, to support regional medical libraries in 1968. The Medical Library Assistance Act authorizes this program of grants to existing institutions to enable them to assume responsibilities for providing regional medical library services in support of local medical libraries having limited resources. This program will provide grants to the designated regional libraries for acquisition of library resources, cataloging, binding, and other processing activities; acquisition of equipment to facilitate the use of library resources; acquisition of mechanisms and employment of personnel to provide rapid transmission of materials and information between regional libraries and the local libraries which they serve; and necessary construction, renovation, rehabilitation or expansion of facilities to provide regional services. Grantee institutions will be required, as a condition of the grant, to expand and modify their supportive facilities and services and to provide free loan services and photoduplication services to qualified requesters.

In addition to the above function, the regional libraries will be expected to give the widest possible dissemination to information concerning their resources and services. Discussions with neighboring areas are also encouraged in order to insure complete coverage ultimately of all users in a national network of biomedical libraries.

In 1967 one regional medical library will be supported. Additional funds in 1968 will provide for six more for a total of seven regional medical libraries supported in 1968.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation.....	397	\$3, 130, 200	447	\$3, 775, 200	+50	+\$645, 000
Other expenses.....		4, 603, 800		5, 586, 800		+983, 000
Total.....	397	7, 734, 000	447	9, 362, 000	+50	+1, 628, 000

Library operations

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	357	\$2, 844, 000	399	\$3, 412, 300	+42	+\$568, 300
Other expenses.....		2, 830, 000		4, 449, 100		+1, 619, 100
Total.....	357	5, 674, 000	399	7, 861, 400	+42	+2, 187, 400

MEDLARS indexing and searching.—The Library requests an increase of eleven positions and \$259,200 to meet indexing and searching goals in 1968. MEDLARS was designed to provide improved bibliographic access to the voluminous biomedical literature for health scientists, practitioners, and students. It was the first application of a computer to the problems of scientific information processing in a library. MEDLARS has been outstanding in its success. The Library will have over 600,000 citations to medical articles on magnetic tape by the end of 1967, but this is not adequate. The same reason that brought the need for the MEDLARS system—the explosion in the volume and scope of scientific literature—now requires that the Library expand its efforts to index all significant articles from the biomedical literature for publication and retrieval purposes. The Ad Hoc Panel on Selection of Journals for *Index Medicus* recommended that 600 periodicals be added to the 2,300 already being indexed. Many top quality journals have increased the number of articles published in each issue as well as the number of issues per year. The Library began a concerted effort in 1965 to improve the quality of computer input, and thereby bibliographic output, by careful expert selection of journals to be indexed, by modifying headings to reflect articles content more accurately, and by more intensive review of indexer data sheets to increase the quality and consistency of indexing. Due to inadequate staff, the Library's Index Section is experiencing a backlog of articles to be indexed which is growing at the rate of 2,000 articles per month. By the end of 1967 the total backlog will reach approximately 60,000 articles. In order to partially reduce the backlog the Library will contract for some indexing. The request includes \$87,000 to contract for indexing of about 20,000 articles in 1968. The request for positions includes 4 additional indexers, 2 revisers (senior indexers), and one clerk-typist to meet the Library's goal of 200,000 articles indexed in 1968.

The Library's Search Section, with responsibility for retrieval of information entered into the computer, produces recurring bibliographies, demand researches, and selects certain demand research bibliographies of general interest for wider distribution at very low cost. To meet the Library's 1968 goal of 3,600 demand searches, 20 recurring bibliographies, and 40 recurring demand searches, the request for positions includes 3 additional searchers and one clerk-typist.

The Library has established a training program in indexing and search procedures to train employees of decentralized MEDLARS search centers. In addition to their regular duties, the new index and search positions will be used to assist in this program. Funds requested will be used for contract indexing, increased printing costs for Library publications, library supplies and equipment, travel, and to fund new positions.

Medical Subject Headings (MeSH) development.—The Library requests an increase of \$80,900 and one position for Medical Subject Headings development.

The National Library of Medicine has developed a uniform system of classification for the medical literature to exploit more fully its MEDLARS computer system. The Medical Subject Headings list has three basic applications:

1. It is the subject heading authority for indexing in *Index Medicus* and MEDLARS.
2. It is the subject heading authority for cataloging at the NLM.
3. It is the dictionary or key for the user of *Index Medicus* and the individual who requires or demands searches on the MEDLARS computer.

MeSH is used not only in this country, but world-wide as a medical thesaurus. The Bibliothèque Nationale has adopted it as the official subject heading authority for France.

The development and updating of MeSH is carried out by Library staff in consultation with committees of experts and individual authorities in the various fields. The list of Medical Subject Headings must be constantly revised and updated as the volume and scope of the world's biomedical literature expands and as the biomedical sciences encompass a greater variety of academic disciplines. As the disciplines become more sophisticated, their language and terminology evolve and change causing terms in the list of Medical Subject Headings to be revised. The Library has a planned program for improving the quality, scope, and level of sophistication of its Medical Subject Headings. During 1966 and 1967, the areas of epidemiology, behavioral science, medical care, and organ

transplantation were analyzed, and index terms, interdisciplinary vocabularies, and methods for the display of the vocabulary were developed. During 1968 particular attention will be given to revising and improving the terms used to describe literature pertaining to biochemical mechanisms and biomedical engineering.

The position requested will be used to employ an additional medical subject headings specialist. Funds will be used to pay for consultative services, contracts for new terminology development and other miscellaneous expenses.

New Computer System: Installation and Research.—The Library requests an increase of \$974,900 and 8 positions for reprogramming and conversion to a new computer system, initial installation of new computer equipment, and systems development and research.

The Library will begin installation of a new computer system to meet future data processing and information systems requirements for: (1) an increase in the level of MEDLARS bibliographic services provided including demand searches and recurring bibliographies; (2) an on-line input system to MEDLARS permitting the indexer and the searcher to communicate directly with the computer; (3) an automated acquisitions and cataloging system; (4) a graphic image storage and retrieval system closely linked to the MEDLARS computer search capability; (5) a drug literature program with chemical search capabilities added to MEDLARS; (6) a Toxicology Information Exchange; (7) an intramural research and development program in information retrieval and scientific documentation.

The computer system will incorporate: (1) processing capacity many times that of present hardware; (2) mass random access memory measured in billions of characters; (3) on-line consoles for direct access into the computer files; and (4) data communications capability for electronic linkage to other centers.

The request contains an increase of six positions and \$49,100 to provide personnel to monitor the development of the new systems. Increased costs associated with developing the new system and operating the old system amount to \$253,200 and include \$105,800 for equipment rental, \$30,000 for equipment maintenance, \$76,900 for equipment purchases and \$40,500 for miscellaneous items. Contracts for conversion to the new system and reprogramming in 1968 will require an increase of \$650,600.

The installation of the new computer system and the general increase in the Library's intramural research and development activities in 1968 will place a heavy burden on the present systems analysis staff of the Library. As the cornerstone of the Nation's biomedical information system, the Library must spearhead efforts for the development and testing of new techniques for collection, organization, processing, and dissemination of all forms of biomedical information. Library staff will conduct research projects in graphic image storage and retrieval and other forms of scientific documentation. An increase of two positions and \$22,000 for systems analysis and research is requested.

Executive Direction and Administration.—An increase of one position and \$138,000 is requested to strengthen the management of the Library to meet increased responsibilities and workload resulting from program growth.

Administrative management services for the Library are provided centrally. Due to its organization status, the Library is required to provide a broader range of such services in greater depth than would be normally the case for an organization of its size. With the greatly increased program responsibilities and enlarged staff and budget of the Library, resulting principally from the enactment of the Medical Library Assistance Act of 1965, and the initiation of a Toxicology Information Exchange, prudence dictates that the administrative management offices be bolstered.

The Library's budget has grown from \$9,685,000 in 1966 to more than \$21,000,000 in 1968. The Library's contract program has increased sharply, from about \$1,000,000 in 1966 to over \$3,000,000 in 1968. The new position will be used for contract management. The funds will be used to support the position and other administrative expenses including office equipment, supplies, and reimbursement to the NIH Management Fund for increased services.

Program Analysis.—The most pressing need in the Office of the Director, NLM, is to enhance the capability for program planning and analysis. The Library has

before it increasingly important responsibilities for the conceptualization of new programs in the area of biomedical communications, for the evaluation of existing programs, and for the provision of standards for the direction of both current and projected programs. As the principal focus for such activities in the Public Health Service, it is imperative that the Library expand its program analysis and evaluation activities.

Consultants will be used to a great extent in the evaluation of the NLM program and in the development of plans and objectives. The program analysis office will maintain statistics and other information pertaining to biomedical libraries, health communication and other subjects relevant to NLM program planning. An increase of one position and \$52,800 is requested for program analysis and evaluation in 1968.

Toxicology Information Exchange.—The Library requests an increase of 20 positions and \$900,000 for planning and development of a Toxicology Information Exchange.

The President's Science Advisory Committee (PSAC) in its report, "Handling of Toxicological Information," drew attention to the urgent need for a better coordinated and more comprehensive computer-based file of toxicology information than is currently available. In response to a delegation of responsibility from the President to the Secretary of Health, Education, and Welfare, and subsequently to the Director of the National Library of Medicine, the Library will plan for the development of an action-oriented program through the formation of an organizational unit to be known as the Toxicology Information Exchange (TIE) which, when operational, will:

1. Provide leadership and technical and financial support in the continuing development and operation of a comprehensive system of information on the interaction of chemicals and biological systems (toxicology).
2. Identify, classify, and maintain current description of all toxicology information users and all significant centers and services which accumulate and analyze toxicology information.
3. Propose compatible systems standards and guidelines within Government for storage and retrieval of toxicology information including common vocabulary systems and compatible computer programming, and promote their adoption by the non-Government sector.
4. Respond to incoming requests for stored information, directly or by referral, and provide or arrange repackaging of stored information where significantly large user-groups are identified.
5. Support preparation of comprehensive chemical information files. Automation techniques will be used when advantages can be gained.
6. Conduct and support research and investigations in those aspects of the processing and communication of toxicology information essential for the development and operation of a user-oriented information system.
7. Provide a data base for the study of biological effects of chemicals which have a meaning to life systems.

In 1968 the Library will convene an advisory committee on toxicological information, composed of experts in the various fields of toxicology, in order to provide *ad hoc* consultations for program development. Two studies, a survey of toxicological information sources and a study of user needs and practices, will be performed on contract. These data gathering and analysis activities are fundamental to the program and will form the basis for planning and other actions. In addition, work will begin on a bibliography of reviews in toxicology.

Positions will be used to recruit the top-level management staff of the program along with high-level analysts and program specialists to work on system design and analysis. Funds requested include \$227,000 to fund the 20 positions, \$500,000 for project contracts, \$20,000 for consultative services, \$30,000 for travel, \$20,000 for equipment, \$10,000 for literature, \$20,000 for rental of office space, \$10,000 for supplies and \$63,000 for other expenses.

An overall program reduction of \$218,400 in the Library Operations base is included in the 1968 budget. This is comprised of decreases for non-recurring costs of \$283,200 partially offset by \$64,800 for annualization of 22 position new in 1967.

Research and support contracts

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....						
Other expenses.....		\$1,345,000		\$700,000		—\$645,000
Total.....		1,345,000		700,000		—645,000
Research and development contracts.....		800,000		200,000		—600,000
Publications support contracts.....		545,000		500,000		—45,000
Total.....		1,345,000		700,000		—645,000

The Medical Library Assistance Act authorizes the Library to use the contract in addition to the grant mechanism for two categories of support—research and publications support. In 1968 the grant mechanism will be used to a greater extent resulting in a net decrease for this activity in 1968. The narrative justification for these funds is found under research and development grants and publications and library support grants.

Review and approval of grants and contracts

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	40	\$286,200	48	\$362,900	+8	+\$76,700
Other expenses.....		428,800		437,700		+8,900
Total.....	40	715,000	48	800,600	+8	+85,600

The Library must provide initial review for the major portion of the applications for grants under the Medical Library Assistance Act. The NLM staff will service three advisory committees: Manpower and Training Committee, Facilities and Resources Committee, and National Medical Libraries Assistance Advisory Board.

Five of the eight positions requested will be used to provide the scientific expertise required to conduct the diverse program of medical library assistance that runs from research and development to construction grants.

Three positions will be used for the grants management and processing staff. The growth in the size of the extramural program and in the number of applications and awards to be processed, requires a considerable increase to handle the increased workload and exercise financial and administrative oversight of the awards made. Positions other than permanent are included for the standing committees as well as part-time and intermittent clerical assistants required during periods of peak workload. This estimate assumes appointments to Committees through Civil Service procedures rather than using a contract mechanism.

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New positions requested, fiscal year 1963

	Grade	Annalsalary
Library operations:		
Associate Director, toxicology information.....	GS-15	\$17,550
Scientist (2).....	GS-15	35,100
Public health program specialist.....	GS-15	17,550
Medical officer.....	GS-15	17,550
Systems analyst.....	GS-15	17,550
Information scientist.....	GS-15	17,550
Medical literature analyst (2).....	GS-14	30,212
Systems analyst (3).....	GS-14	45,318
Scientist.....	GS-14	15,106
Administrative staff assistant.....	GS-14	15,106
Supervisory programmer.....	GS-14	15,106
Contracts officer.....	GS-14	15,106
Public health program specialist.....	GS-13	12,873
Scientist.....	GS-13	12,873
Medical literature analyst.....	GS-13	12,873
Searcher.....	GS-13	12,873
Supervisory programmer.....	GS-13	12,873
Digital computer systems administrator.....	GS-13	12,873
Systems analyst (2).....	GS-13	25,746
Librarian.....	GS-12	10,927
Public health program specialist.....	GS-12	10,927
Medical literature analyst.....	GS-12	10,927
Searcher.....	GS-12	10,927
Indexer (4).....	GS-12	43,708
Senior programmer.....	GS-12	10,927
Secretary.....	GS-9	7,696
Secretary.....	GS-7	6,451
Secretary (3).....	GS-5	15,993
Clerk-typist (2).....	GS-5	10,662
Input typist (2).....	GS-2	7,850
Total, library operations (42).....		508,783
Review and approval of grants and contracts:		
Public health program specialist.....	GS-14	15,106
Regional resources officer.....	GS-14	15,106
Training officer.....	GS-14	15,106
Grants management officer.....	GS-13	12,873
Construction officer.....	GS-13	12,873
Publication officer.....	GS-11	9,221
Grants assistant (2).....	GS-5	10,662
Total, Review and approval of grants and contracts (8).....		90,947
Total new positions, all activities (50).....		599,730

MEDICAL JOURNALS PUBLICATIONS

Senator HILL. Now, Dr. Cummings, National Library of Medicine.

Glad to have you here with us, Doctor.

Dr. CUMMINGS. Thank you, Mr. Chairman. I have with me Dr. Marjorie Wilson, director of the extramural programs; and James Isbister, our executive officer.

Senator HILL. They are your brain trusters?

Dr. CUMMINGS. Yes, sir.

Mr. Chairman, since the beginning of the modern scientific era in the mid-17th century, the fund of human knowledge is estimated to have doubled every 15 years. The increasing investment of resources in recent years devoted to improving health has stimulated the publication of information at a rate which has overloaded all health science information channels. Today there are more than 6,000 different medical journals published in the world.

Senator HILL. What approximate percent of these would you say are published here in this country?

Dr. CUMMINGS. Less than half of them are published in the English language, and perhaps less than 30 percent are published in the United States.

These periodicals contain approximately 250,000 articles each year written in 40 different languages. Based on historical evidence, this periodical literature will double again in about 12 years.

TECHNICAL REPORT LITERATURE

In addition, the technical report literature produced by Government contractors is expanding at an enormous rate. National and international scientific meetings produce still more information important to the growth of the health sciences. All of these elements contribute to a critical information overload.

INFORMATION

COLLECTION, ORGANIZATION, AND DISSEMINATION

Good communication among all members of the biomedical community is essential in improving health. Ineffective communication inhibits the progress of research and the application of new findings in the treatment of patients. The health researcher finds it increasingly difficult to be aware of the specialized literature pertaining to his fields of inquiry. With present methods, the average health practitioner finds it virtually impossible to keep abreast of the literature; his efforts to maintain awareness of recent medical findings are thwarted by a maze of uncoordinated information sources.

Senator HILL. It is a problem, isn't it?

Dr. CUMMINGS. I think it is a very significant problem.

Scientific progress which created the information problem offers the best hope for its solution. Many technological advances which have enabled the scientific community to increase the rate of data generation and analysis provide the means for improved collection, organization, and dissemination of information.

Solutions to the technical problems of the information explosion lie in the application of new technology to specific needs in the areas of information management and transmission, graphic image information storage and retrieval, and direct man-machine communication.

We are studying these problems and developing new applications for their solution.

MANAGEMENT

The National Library of Medicine has been concerned with the information management problem for over a hundred years. Since 1879 the Federal Government has accepted responsibility for the publication of indexes and bibliographies in the medical sciences as guides and major resources for the medical community.

BIOMEDICAL LITERATURE REPOSITORY

The National Library of Medicine, with its collection of nearly 1.3 million books, journals, theses, photographs, and other records constitutes the ultimate repository of the world's biomedical literature. The National Library of Medicine is the largest and most comprehensive research library in any field of science.

INFORMATION TRANSMISSION

But the Library is more than a passive repository of information. It is, in fact, an active information center, utilizing a variety of modes and mechanisms of information transfer. During 1966 the Library indexed 164,545 journal articles, performed more than 3,000 computer-generated demand searches, published 47 major recurring demand search bibliographies, provided 152,000 interlibrary loans, and answered 21,871 reference inquiries.

Senator HILL. It keeps your staff pretty busy, doesn't it?

Dr. CUMMINGS. It keeps them hopping.

BIBLIOGRAPHIC AND REFERRAL SERVICES

In addition, it provided bibliographic and referral services through Index Medicus, Cumulated Index Medicus, Current Catalog, Bibliography of Medical Reviews, and Bibliography of Medical Translations. It responded to 91,000 reader requests within the Library and photographed 3.4 million pages for preservation and distribution.

INFORMATION STORAGE AND RETRIEVAL

MEDLARS

In an effort to provide more rapid access to the flood of new publications, the NLM developed the MEDLARS system, one of the world's largest computer-based information systems.

MEDLARS combines the talents of trained literature analysts and the processing capabilities of a high-speed electronic computer. The literature analysts, using terms selected from medical subject headings (MESH), the master key to MEDLARS, index biomedical journal articles, and assign the MESH terms which describe the articles' content. These data are entered into the computer and transferred to magnetic tapes for storage and rapid retrieval. The MEDLARS files now contain over 500,000 citations to biomedical journal articles published since January 1964.

INDEX MEDICUS

In addition to providing a rapid and efficient method for producing the monthly Index Medicus, a comprehensive index to articles from approximately 2,300 biomedical journals, and an annual Cumulated Index Medicus, the Library's computer operation permits rapid machine reference searches. These computer searches provide health scientists, educators, and clinicians rapid and easy access to the biomedical literature in broad areas of medical interest.

BIBLIOGRAPHY PUBLICATIONS

To provide extensive circulation of these references in specialized medical subject areas, the Library cooperates with nonprofit professional organizations and other Government agencies in producing published recurring bibliographies, for distribution to groups of workers in various specialized fields.

MEDLARS SYSTEM

To facilitate local access to the MEDLARS system, the Library supports five decentralized MEDLARS search centers at the Universities of California (Los Angeles), Colorado, Alabama, and Michigan, and Harvard University.

The demands for MEDLARS searches this year at one point exceeded our human resources to provide these services, forcing us to declare a 6-week moratorium on the processing of new requests for demand searches. Thus, Mr. Chairman, an increase of 11 positions and \$259,200 is needed in 1968 to meet the expanding indexing and computer search formulation workload.

BUREAU OF THE BUDGET REDUCTION

Senator HILL. Did the Budget Bureau allow you these figures? They cut you down some; did they not?

Dr. CUMMINGS. We did have—

Senator HILL. The Department cut you quite a bit and then the Budget Bureau cut you quite a bit?

Dr. CUMMINGS. Well, the Department, I think, was quite generous with respect to our budget submission, but the Bureau of the Budget in effect reduced our request by some 30 percent.

Senator HILL. According to the figure I have here, they cut you some \$8,117,000.

Dr. CUMMINGS. The Bureau of the Budget cut was in that amount; the Department cut was much smaller.

Senator HILL. A million dollars. But that gave you an overall reduction of \$9,117,000?

Dr. CUMMINGS. That is correct.

Senator HILL. In fact, you got a very small increase over the present year.

Dr. CUMMINGS. Our total increase in this budget represents \$970,000.

LIBRARY CONSTRUCTION REDUCTION

Senator HILL. How much are these reductions going to affect you?

Dr. CUMMINGS. I think there will be a serious effect on our ability to provide a full range of information services to the biomedical community. In specific terms, the major effects will be to reduce our ability to respond to the Nation's needs for new library construction and to pursue the development of a regional library network.

I think more than 50 percent of the Bureau of the Budget cut is in the area of new library construction. The principal effect will be

felt by the universities and medical schools who are in need of the libraries.

COMPUTER SYSTEM INSTALLATION

We are requesting, Mr. Chairman, \$974,900 and eight positions for a new, more efficient computer system. We have almost exhausted the time available on our current computer equipment whose design was frozen 6 years ago. The original system has met expectations for its 5-year period of operation. However, more advanced equipment is required to handle the expanding workload and to allow direct, on-line communication with the computer through remote terminals, a needed feature available in other modern systems.

Senator HILL. Will the budget now before us meet this need?

Dr. CUMMINGS. Yes; the budget before us, if approved, will meet this need.

MEDICAL LIBRARY ASSISTANCE ACT OF 1965

Recognizing that the growth of institutions and mechanisms to collect, organize, and disseminate biomedical information has not kept pace with the information explosion, Congress enacted the Medical Library Assistance Act of 1965.

To implement the act Congress provided an increase over the 1967 President's budget of \$200,000 for support of the regional medical library programs and 10 positions and \$100,000 for review and approval of grants and contracts. The Congress added an additional nine positions and \$668,000 for increased levels of preservation filming, graphic image storage and retrieval, equipment purchases, and development and direction of the Library's application of advanced technology to biomedical communications.

BUDGET REQUEST

Funds to be used in 1968 for programs authorized by the act include: \$12,500,000 for construction grants to improve and expand the Nation's medical library facilities—

Senator HILL. How much did you ask for?

Dr. CUMMINGS. We asked for the full amount authorized by the act, \$10 million, and we had a carryover of \$7.5 million from the current fiscal year as part of the general deferment of new construction starts.

Senator HILL. That would give you \$17 million?

Dr. CUMMINGS. In effect, we have a deficit of \$5 million below our authorization and our planned utilization.

Also included in our 1968 program plans are \$1.6 million for grants and contracts for research and development directed toward solving some of the difficult problems in storing, retrieving, and transmitting biomedical information; \$1.2 million to increase the number and improve the quality of librarians and information specialists available to serve the Nation's medical libraries; \$100,000 for special scientific projects; \$800,000 for support of publications, such as translations, bibliographies, critical reviews, indexes, and abstracts; and \$2.5 million for grants to biomedical libraries for strengthening their resources and services.

REGIONAL MEDICAL LIBRARIES SUPPORT

The Library is currently planning a program to initiate support for six or seven regional medical libraries, and the 1968 budget includes \$1.5 million for grants for the development of existing medical libraries as regional service centers to improve and accelerate access to the health science literature.

TOXICOLOGICAL INFORMATION SYSTEM DEVELOPMENT

An important new responsibility, Mr. Chairman, has been assigned to the Library in the past year. The President's Science Advisory Committee in its report, "Handling of Toxicological Information," published in June of 1966, drew attention to the urgent need for a better coordinated and more comprehensive computer-based file of toxicology information than is now currently available. Recent congressional hearings and legislation express wide public concern for this need.

Responding to the PSAC report, the President asked the Secretary of Health, Education, and Welfare to be responsible for developing and operating a computer-based toxicological information system.

In the foreword to the report, the President said:

The number of chemical compounds to which people become exposed is already vast and increasing daily. This is a result of our steadily advancing industrialization, changes in agricultural practices and advances in the biomedical sciences. All segments of our population are exposed either deliberately or in the course of daily living to many such compounds.

Senator HILL. Many of these compounds that we thought were so fine have some distinct disadvantages; is that right?

ADVERSE EFFECT OF CHEMICAL COMPOUNDS ON LIVING SYSTEMS

Dr. CUMMINGS. They have in some cases very profound adverse effects on living systems, be they man, animal, or plantlife.

Senator HILL. I recall here not too many years ago when they started feeding chickens antibiotics. They thought that was going to be a great thing, poultry farmers certainly thought so. The chickens grow faster, take less food, and weigh a lot more.

What do these antibiotics do to us who eat these chickens?

Dr. CUMMINGS. That is an important question which has been studied for many years.

Senator HILL. There is one question that doesn't have to be studied, the chicken doesn't taste nearly as good as it did in the old days?

Dr. CUMMINGS. I am not sure I could pass professional judgment on that.

Senator HILL. I am not a professional, but I think I can pass judgment by saying they don't taste like they did in the old days. See, when the farmer brought that chicken into the town, you bought a chicken, a fryer, a broiler. You put him in the chicken coop in the backyard. When you got ready to eat him, you went out and wrung his neck, soused him in some hot water, took his feathers off, took the insides out of him—he tasted a whole lot better than he does today; is that right?

You say you are not qualified to say?

Dr. CUMMINGS. I have never had the chore of plucking a chicken. Senator HILL. You never plucked a chicken?

Dr. CUMMINGS. The chicken always came in cellophane. It reflects a difference in our ages, Mr. Chairman.

Senator HILL. Well, I don't know. I took up here and—with that evidence before me, I will not make any admissions.

You don't think the antibiotics in these chickens had anything to do with this scarcity up here, do you?

Dr. CUMMINGS. I don't believe I can attribute scarcity to antibiotics-fed chickens; perhaps it is related to the hormones that chickens have been exposed to.

Senator HILL. I see.

FOOD AND DRUG ADMINISTRATION ADVERTISEMENT REGULATIONS

Dr. CUMMINGS. Well, Mr. Chairman, we are requesting—

Senator HILL. But we do have these problems, don't we?

Dr. CUMMINGS. Yes, we do, and they are real problems. There are, of course, the hidden problems of the chemical environment which is hard to see or smell or taste, but which may have very serious effects on the health of man and animals.

Senator HILL. I notice the Food and Drug Administration is going to issue some new regulations about some of these advertisements. You saw that, I suppose?

Dr. CUMMINGS. I saw that in the newspapers.

Senator HILL. In other words, they advertise what this new compound or this new drug will do, but they don't say anything about some harmful effects that might come from it.

Dr. CUMMINGS. This is unfortunately true.

Senator HILL. That is what it is. I don't look at TV much, but you cannot turn on TV that you don't get cigarette advertisements, and "they are mild."

All right, go ahead, Doctor.

Dr. CUMMINGS. Mr. Chairman, we are requesting \$900,000 and 20 positions—

Senator HILL. By the way, still off the record.

(Discussion off the record.)

Senator HILL. On the record.

TOXICOLOGY INFORMATION EXCHANGE

Dr. CUMMINGS. We requested \$900,000 and 20 positions to begin development of a toxicology information exchange which will inform the public as well as physicians and scientists of toxic effects of drugs and chemicals on man and his environment.

NEW OBLIGATIONAL AUTHORITY REQUEST

In summary, our total request is for \$21,162,000 in new obligatory authority representing a net increase of \$970,000 over the amount appropriated in 1967. The principal items of increase are for development of a new computer system and a toxicology information exchange, and for regional medical library grants.

I shall be pleased to try to answer any questions you might have.

GRAPHIC IMAGE STORAGE AND RETRIEVAL

Senator HILL. Doctor, you recall last year the House added \$550,000 and the Senate concurred in this addition for graphic image storage and retrieval?

Dr. CUMMINGS. Yes, sir.

Senator HILL. I recall a few years ago you brought several books of medical literature with the pages disintegrating and falling apart. What is the situation with reference to this project now?

Dr. CUMMINGS. Well, I am pleased, obviously, with the action taken by the House and Senate last year, because it has made it possible for the National Library of Medicine to undertake to capture the images of these deteriorating documents before they, in fact, disappear.

We are on target with respect to our projections of the number of pages that would be filmed. We have about 2.8 million pages already filmed, and my staff informs me that at least the same amount and perhaps a larger number of pages will be filmed with the funds still available to us, so that in the aggregate I would expect that perhaps more than 6 million pages of our deteriorating collection will be on archival and working film.

Senator HILL. So you think, then, you are making progress with this project?

Dr. CUMMINGS. Yes, there is no question in my mind that these funds have been put to good use and will keep the recorded knowledge available within the national library.

HISTORY OF MEDICINE

Senator HILL. Several years ago the Congress added funds to begin a program on the history of medicine and I believe in the second year we here in the Senate had to restore funds cut back by the Budget Bureau for this project. What is the status of this project now?

Dr. CUMMINGS. The program is moving forward, I think, in a very fine way and I would like to ask Dr. Wilson, with your permission, to give you a brief report on the progress made.

Senator HILL. All right, Doctor.

Dr. WILSON. Yes, indeed. We have continued the history of medicine program, and this year I can tell you we have 19 research projects in the area of history of medicine and two very fine training grants which provide graduate training. These are for individuals both predoctoral and postdoctoral, most of whom have scientific backgrounds, some M.D.'s some Ph. D.s, to obtain additional training in history.

This provides the country with individuals who can train others in the history of medicine. Many medical schools, for example, are looking for people to establish departments of history of medicine. The program has actually increased some within the appropriation.

Senator HILL. You increased it some with this appropriation?

Dr. WILSON. Yes.

Senator Hill. How far back in the history of medicine can you go, Doctor?

Dr. WILSON. Well, back to the—

Senator HILL. I don't mean you can speak from firsthand knowledge; I don't imply that at all.

Dr. WILSON. Back certainly to the beginnings of medical practice and medical knowledge and scientific knowledge relating to medicine.

Senator HILL. That would be what year B.C.?

EARLY CHINESE AND EGYPTIAN MEDICINE

Dr. CUMMINGS. I think one can go back to the early Chinese and Egyptian medicine, which is probably at least 20 or 30 centuries B.C. and go back to the clay tablets and papyri, among other forms. But I think it would be unfair to leave you with the impression that the scholars who are being supported through this program are, in fact, replotting that part of antiquity alone.

They are concerned also with the 17th, 18th, and 19th centuries, to reexamine their influence on current medical practice, trying to search for unexploited opportunities through these reviews.

Senator HILL. I don't imagine Imhotep influences medicine too much today, does he?

Dr. CUMMINGS. I don't think so.

Senator HILL. He is a little too far back, isn't he?

Dr. CUMMINGS. I wouldn't say any recorded knowledge is too far back, but I think the rediscovery of knowledge from that period of history may not be as significant as a reexamination of more current history.

CONTEMPORARY MEDICINE EXAMINATION

It gives me an opportunity to tell you also, Mr. Chairman, that the library is carrying out an exciting new program in the examination of contemporary medicine through the use of modern devices such as the tape recorder. We are now able to capture from direct dialog with leaders of contemporary medicine much of the unwritten record of their influences on advances in medicine. This is a very exciting new program.

Senator HILL. But most interesting, is it not?

Dr. CUMMINGS. I think it is a most interesting program, not so much for what we may gain today, but for what future scholars may gain by having access to this kind of record.

REGIONAL MEDICAL LIBRARY DEVELOPMENT

Senator HILL. Would you say most of the reduction made in your request would go to the matter of funds for regional libraries?

Dr. CUMMINGS. Well, most of the reduction was applied to construction grants. That is a \$5 million reduction.

The second largest reduction was for research—\$1,400,000. Also we were reduced by \$1 million for regional medical library development.

Senator HILL. That would slow up your program, wouldn't it?

Dr. CUMMINGS. It will have a delaying effect on implementing this program. Fortunately, however, sufficient funds were left in the budget to give us an opportunity to establish six or seven regional libraries in the next fiscal year, and we would be hopeful perhaps of building upon this in the subsequent fiscal year.

Senator HILL. But you would have funds for six or seven in the coming fiscal year?

Dr. CUMMINGS. Yes. We were given \$200,000 for planning the regional medical library program in 1967 and we have \$1.5 million in the fiscal year 1968 budget to implement the program. I think this will give us the opportunity to make a very good start. Dr. Wilson and her staff have met with at least 12 communities who have expressed interest in providing regional library services.

PROGRAM TO MAKE INFORMATION READILY ACCESSIBLE

She has recently summarized this program plan as well as the action plan, which, in my view, will provide the beginning of an effective medical library network. Ultimately we believe this network will provide the important mechanism for making information readily accessible.

We are really not so much interested in the library as an institution as we are interested in using it as an instrument for getting information to the physicians who treat patients, Mr. Chairman.

Senator HILL. The fellow at the bedside, is that correct?

Dr. CUMMINGS. That is correct. The library, we believe is a channel to accomplish this. All of these programs are geared to the end-user, with the library being the transmission link, if you will.

Senator HILL. We need to acquire more knowledge, of course, much more knowledge but it is also important that when we get the knowledge, we must disseminate it to the user; is that right?

Dr. CUMMINGS. That is correct, that is our philosophy at least.

Senator HILL. And then this is something you and I cannot do anything about, I guess. I think we need a little more dedication on the part of some of the users today?

Dr. CUMMINGS. Yes, I think that is an educational problem more than anything else.

Senator HILL. Anything you would like to add, Doctor?

Dr. WILSON. No, thank you.

Senator HILL. You would not have to have any fears of any comment here.

Anything else, Doctor?

Dr. CUMMINGS. No, thank you for this opportunity.

Senator HILL. We certainly want to thank you all very, very much. We deeply appreciate your statement.

BUILDINGS AND FACILITIES

STATEMENT OF IAN K. BURGESS, DIRECTOR, DIVISION OF BUILDINGS AND FACILITIES; ACCOMPANIED BY DR. LEONARD D. FENNINGER, DIRECTOR, BUREAU OF HEALTH MANPOWER; DR. RICHARD A. PRINDLE, DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL; DR. JOHN J. WALSH, DIRECTOR, DIVISION OF DIRECT HEALTH SERVICES; DR. JAMES A. SHANNON, DIRECTOR, NATIONAL INSTITUTES OF HEALTH; CHRIS A. HANSEN, DIRECTOR, DIVISION OF RESEARCH SERVICES, NIH; DR. WILLIAM H. STEWART, SURGEON GENERAL; JOHN H. KELSO, EXECUTIVE OFFICER; G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

BUILDINGS AND FACILITIES

For construction, major repair, improvement, extension, and equipment of Public Health Service facilities or other government facilities allocated for use of the Public Health Service, not otherwise provided, including plans and specifications and acquisition of sites, **[\$18,279,000]** \$10,715,000, to remain available until expended.

Amounts available for obligation

	1967	1968
Appropriation.....	\$18,279,000	\$10,715,000
Unobligated balance brought forward.....	36,981,309	13,304,877
Unobligated balance transferred to: "Buildings and facilities, Federal Water Pollution Control Administration".....	-8,433,192	-----
Deduct unobligated balance carried forward.....	-13,304,877	-4,173,115
Total obligations.....	33,522,240	19,846,762

1614 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Obligations by activities

Description	1967 estimate	1968 estimate	Increase or decrease
Dental health center addition.....	\$223,000	\$2,000,000	+\$1,777,000
Central air pollution research facility.....		1,815,000	+1,815,000
Northeast shellfish sanitation research center.....	1,184,000		-1,184,000
NIH animal center.....	1,742,557	120,000	-1,622,557
Combined service facility, NIH.....		180,000	+180,000
Multilevel parking facilities (NIH):			
(a) General office building extension.....	95,000	1,530,000	+1,435,000
(b) Cancer-mental health/neurology building.....	106,000	1,905,000	+1,799,000
Incinerator facility, NIH.....	243,000	1,800,000	+1,557,000
Modernization of PHS hospitals.....	2,404,000	2,458,000	+54,000
Repairs and improvements:			
(a) Bureau of Disease Prevention and Environmental Control.....	1,337,112	1,352,000	+14,888
(b) Bureau of Health Services.....	1,268,722	925,000	-343,722
(c) National Institutes of Health.....	1,665,845	500,000	-1,165,845
(d) National Library of Medicine.....	67,501	75,000	+7,499
(e) National Institute of Mental Health.....	169,150	990,000	+820,850
Total, repairs and improvements.....	4,508,330	3,842,000	-666,330
Communicable disease facility, San Juan, P.R.....	1,457,169		-1,457,169
Northwest shellfish sanitation research center.....	1,070,000	48,000	-1,022,000
Solid waste research facility.....	422,946		-422,946
Laboratory facility, Cincinnati, Ohio.....	1,385,000		-1,385,000
Appalachian environmental health field station.....	350,000		-350,000
Arctic health research center animal facility.....	1,173,000		-1,173,000
Arctic health research center.....	479,936		-479,936
Isotope laboratory addition, NIH.....	40,000	415,000	+375,000
Facilities planning.....	125,000		-125,000
Child health and human development research facility, NIH.....	700,000	20,000	-680,000
National environmental health sciences center.....	1,785,000		-1,785,000
Clinical center addition, NIH.....	771,984	50,000	-721,984
Neurology-child health research facility, Puerto Rico.....	315,000	1,962,000	+1,647,000
General office building extension, NIH.....	6,202,000	308,000	-5,894,000
Gerontology research facility, NIH.....	325,000	443,000	+118,000
Extension to clinical center cafeteria.....			
Library relocation, NIH.....	38,400	10,024	-28,376
Warehouse relocation, building 13, NIH.....	665,000	67,000	-598,000
Mental health-neurology-cancer cafeteria, NIH.....	24,300	14,122	-10,178
Biologics standards laboratory annex, NIH.....	113,706		-113,706
Communicable disease center.....	1,585,967		-1,585,967
Cancer research facility, NIH.....	1,579,000	689,616	-889,384
Service building, building 12, NIH.....	11,829		-11,829
Master utilities extension.....	2,326,000	170,000	-2,156,000
Animal quarters, NIH.....	4,693		-4,693
Research facilities, Lexington, Ky., NIH.....	4,279		-4,279
Library facilities.....	47,112		-47,112
Dental research building, NIH.....	14,032		-14,032
Total obligations.....	33,522,240	19,846,762	-13,675,478

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1615

New obligatory authority by activity

Description	1967 estimate	1968 estimate
Dental health center addition		\$2,558,000
Central air pollution research facility		1,815,000
Northeast shellfish sanitation research center addition	\$1,108,000	
NIH animal center		120,000
Combined service facility, NIH		200,000
Multilevel parking facilities:		
(a) General office building extension, NIH	1,489,000	100,000
(b) Cancer-mental health-neurology research buildings, NIH	1,985,000	
NIH incinerator facility	270,000	2,080,000
Modernization of PHS hospitals	5,021,000	
Repairs and improvements:		
(a) Disease prevention and environmental control	748,000	1,352,000
(b) Bureau of Health Services	582,850	925,000
(c) National Institutes of Health	500,000	500,000
(d) National Library of Medicine		75,000
(e) National Institute of Mental Health	169,150	950,000
Communicable disease facility, San Juan, P.R.	1,300,000	
Northwest shellfish sanitation research center	1,000,000	
Solid waste research facility		395,000
Laboratory facility, Cincinnati, Ohio	1,285,000	
Appalachian environmental health field station	330,000	
Arctic health research center—animal facility	1,173,000	
Arctic health research center, equipment	288,000	
Isotope laboratory addition, NIH	500,000	
Facilities planning	125,000	
Total, new obligatory authority	18,279,000	10,715,000

Obligations by objects

Description	1967 estimate	1968 estimate	Increase or decrease
PUBLIC HEALTH SERVICE			
Other services	\$4,600,000	\$4,000,000	—\$600,000
Equipment	500,000	200,000	—300,000
Lands and structures	1,200,000	1,000,000	—200,000
Total, Public Health Service	6,300,000	5,200,000	—1,100,000
ALLOCATION TO GENERAL SERVICES ADMINISTRATION			
Printing and reproduction	50,000	60,000	+10,000
Other services	2,800,000	3,700,000	+900,000
Lands and structures	24,372,240	10,886,762	—13,485,478
Total, General Services Administration	27,222,240	14,646,762	—12,575,478
Total obligations	33,522,240	19,846,762	—13,675,478

1616 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Summary of changes

1967 Appropriation-----	\$18, 279, 000
1968 Appropriation request-----	10, 715, 000
Total change-----	<u><u>-7, 564, 000</u></u>

INCREASES

1. Dental health center addition-----	2, 558, 000
2. Central air pollution control facility-----	1, 815, 000
3. NIH animal center-----	120, 000
4. Combined service facility, NIH-----	200, 000
5. Multilevel parking facility—planning—NIH-----	100, 000
6. NIH incinerator facility-----	2, 080, 000
7. Repairs and improvements:	
Bureau of Disease Prevention and Environmental Control--	1, 352, 000
Bureau of Health Services-----	925, 000
National Institutes of Health-----	500, 000
National Library of Medicine-----	75, 000
National Institute of Mental Health-----	990, 000
Gross increases-----	<u><u>10, 715, 000</u></u>

DECREASES

1. Northeast shellfish sanitation research center addition-----	-1, 108, 000
2. Multilevel parking facilities:	
(a) General office building extension, NIH-----	-1, 489, 000
(b) Cancer-mental health-neurology research buildings, NIH-----	-1, 985, 000
3. NIH incinerator facility-----	-270, 000
4. Modernization of PHIS hospitals-----	-5, 021, 000
5. Repairs and improvements:	
(a) Disease prevention and environmental control-----	-748, 000
(b) Bureau of Health Services-----	-582, 850
(c) National Institutes of Health-----	-500, 000
(d) National Institute of Mental Health-----	-169, 150
6. Communicable disease facility, San Juan, P. R.-----	-1, 300, 000
7. Northwest shellfish sanitation research center-----	-1, 000, 000
8. Solid waste research facility-----	-395, 000
9. Laboratory facility, Cincinnati, Ohio-----	-1, 285, 000
10. Appalachian environmental health field station-----	-330, 000
11. Arctic health research center—animal facility-----	-1, 173, 000
12. Arctic health research center, equipment-----	-298, 000
13. Isotope laboratory addition, NIH-----	-500, 000
14. Facilities planning-----	-125, 000
Gross decreases-----	<u><u>-18, 279, 000</u></u>

Net change requested----- -7, 564, 000

INTRODUCTION

This appropriation includes all proposed direct construction items of the Public Health Service except construction of Indian health facilities, and all continuing projects except the Mental health-neurology research facility, which was appropriated under "Mental Health activities" and "Neurology and blindness activities" in 1961.

The justifications following are grouped under the appropriate Bureau headings, which include for each Bureau its portion of the estimate for major alterations, repairs, and improvements.

BUREAU OF HEALTH MANPOWER

Dental Health Center Addition—Construction

1968 appropriation estimate----- \$2, 558, 000

In 1966, \$250,000 was appropriated for planning the physical expansion of the Dental Health Center in San Francisco. The major portion of the Division of Dental Health's program expansion over the past four years has been in the areas of applied epidemiological research and continuing education—the major programs which make up the Dental Health Center in San Francisco, California. This trend will continue over the next five years.

The Division is now restricted primarily by lack of space in which to expand its residency training, research, and short courses for private practitioners and dental public health workers. The proposed addition will increase significantly the numbers of dentists and dental workers that can be trained. It will further provide a base from which continuing education programs can be tested and demonstrated.

Furthermore, Division plans for 1968 call for an increased emphasis on prevention and control studies of periodontal diseases and cleft lip and cleft palate. Along with the operation of the National Cleft Lip and Palate Intelligence network, space is needed to conduct an active, experimental program of prevention and control of cleft lip and palate which will include Cancer-based field investigations. Data from these investigations will be processed under an accelerated data processing program in the new wing of the Center.

The space deficiency is a most serious drawback in the field of clinical assessment of dental materials and technology. The clinical application of current research findings from basic experiments in new materials and techniques has long been lacking. Additional space would enable a coordination of effort with the training program at the Center and would provide a facility for joint co-operation with the research interest of the Public Health Service hospital in San Francisco.

The proposed addition will be 130 feet wide, 86 feet deep, three stories in height, plus basement, with a gross area approximating 45,000 square feet having 30,000 square feet of net usable space.

Estimated progress schedule

Design:	
Award.....	July 1966
Completion.....	June 1967
Construction:	
Award.....	January 1968
Completion.....	July 1969

BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL

National Center for Air Pollution Control Facility—Planning and Design

1968 Appropriation estimate..... \$1,815,000

Planing and design funds are requested for a facility to house the National Center for Air Pollution Control (NCAPC) to be located at the Research Triangle in North Carolina on donated land. This facility is proposed to provide permanent space in a single locality for the Center's programs, excluding Regional Office Personnel, temporary field investigational units, the Motor Vehicle Compliance Laboratory, and certain elements which will be retained in Washington. When completed the Center will house a staff of 1,000 people in approximately 450,000 gross square feet of space. The estimated construction cost of this facility is \$25,000,000.

Specifically, the activities to be provided for in the proposed facility include the research and development programs and the technical services and training activities of the Center.

The research and development programs to be housed in the proposed facility include activities concerned with the development of control technology, research on the effects of air pollutants on health and the development of standards and criteria for air quality and air pollutant emissions. The disciplines involved in these programs include the physical and engineering sciences, and statistical, medical, epidemiological, and other biological activities. Technical services and short-course training activities in support of Federal, State, and local government air pollution control would also be headquartered at the proposed facility.

The air pollution programs proposed for the new facility will benefit significantly from the fact that the National Environmental Health Sciences Center

(NEHSC) will also be located on the 509 acre site within the Research Triangle. The programs of the NEHSC, which emphasize fundamental, basic research on the biological effects of environmental hazards, will provide research data which will bear importantly on the success of the work of the NCAPC. The activity of the NCAPC is of a more mission-oriented nature, concerned not only with understanding the effects of air pollution, economic as well as biological, but especially with developing the engineering technology to permit control of air pollution. In addition to the technical advantages inherent in the proximity of the two Centers, significant economies of operation are anticipated through common use of supporting services such as power plant and distribution system, warehousing and material storage, buildings and grounds maintenance, motor pool, and food preparation service.

Critical considerations in determining the proposed site for the NCAPC also include the following: (a) a requirement for relatively uncontaminated air to permit controlled air pollution research activity, (b) the close access of educational, scientific resources and institutions competent in the medical, engineering, agricultural, and related scientific disciplines, and (c) a climate which is conducive to the type of plant growth which is required for research on the effects of air pollutants on vegetation.

The facility needs of the National Center for Air Pollution Control have reached a critical stage. A majority of the Center's personnel is now housed in overcrowded temporarily leased or assigned space in five widely scattered locations in Cincinnati, Ohio. Also, the Department of the Interior has taken custody of the Robert A. Taft facility in Cincinnati which currently houses the largest group of air pollution research personnel. This group will have to be relocated. During the past several years, the Federal air pollution control program has been significantly expanded. Further expansion is projected in order to carry out effectively the Federal responsibilities under the Clean Air Act and its amendments. The proposed facility, to provide permanent and appropriately designed housing for these expanded activities, is urgently needed for efficient conduct of these enlarged responsibilities.

Estimate progress schedule

Master site plan :	
Award.....	April 1967.
Completion.....	November 1967.
Design :	
Award.....	December 1967.
Completion.....	November 1969.
Construction :	
Award.....	March 1970.
Completion.....	April 1972.

Repairs and improvements

1968 appropriation estimate..... \$1, 352, 000

1. Communicable Disease Center, Atlanta, Ga., and vicinity, \$720,600

Addition of a loading dock to handle deliveries of equipment, supplies and so forth, and installation of hoists to allow rapid servicing of equipment and to minimize injury to employees.

Conversion of non-laboratory space to laboratory space.

Complete painting of the facility.

Replacement of two package boilers and repair of incinerator.

Repair and surface treatment of roads and parking areas.

Field Installations, \$161,400

Renovation of animal, feed, and storage buildings and replacement of several small wooden structures with one steel building at the Plague Laboratory, San Francisco; replace oil burners; road improvement and repairs; and addition of emergency generator at the Savannah, Georgia field station.

2. Shellfish Sanitation Research Centers, Dauphin Island, Ala., Narragansett, R.I., and Manchester, Wash., \$165,000

Relocation of air refrigerant compressors, increase of salt water heat exchange capacity, relocation of water still and provision of delivery system to chemical labs, increase of sea water holding tank capacity, and other minor repairs and improvements at the Narragansett location. Insulation of chilled water pipes, repairs to the air conditioning system, resurfacing roads and parking areas, and other minor repairs at the Dauphin Island location. Repair and improvement of

an existing structure on the northwest property to provide storage facility and facilities for holding experimental shellfish stocks and repairs to access roadways.

3. *Artic Health Rescarch Center, Fairbanks, Alaska, \$65,000*

Paving of parking lot and road and landscaping of mall area. The \$55,000 represents the AHRC share of the project which is a joint effort of the University of Alaska, Alaska Water Laboratory and the Arctic Health Research Center.

4. *Pesticides Research Laboratory, Miami, Fla., \$20,000*

Correction of deficiencies in plumbing and electrical systems, paving of parking area and repair of walks.

5. *Solid waste facility, Johnson City, Tenn., \$50,000*

Installation of sludge thickeners for new sewage treatment. Repairs and alterations of grinding equipment used in composting operations.

6. *Radiological Health Laboratories, Winchester, Mass., and Montgomery, Ala., \$100,000*

Provision of emergency generator, boiler repairs and pipe replacement, alteration of heating and air conditioning mechanical system and ductwork at the Winchester location. Renovation to convert animal room to laboratory space at Montgomery site.

7. *Foreign quarantine*

Marcus Hook, Pennsylvania.—Exterior and interior painting of all structures, repairing and resurfacing of station roadways and landscaping of grounds, \$9,000.

New Orleans, Louisiana.—Roof repairs, renovation and painting of Building 5 and interior alterations of Building 3, \$18,000.

Roscbank, Staten Island, New York.—Remove cornices, rebuild parapet walls, waterproof and repaint chimney of Building 10. Replace wood siding with aluminum, Building 12. Paint exterior of all buildings except No. 12. Rewire electrical circuits of Building 1. Install fire detection and alarm system in all buildings, \$34,000.

San Juan, Puerto Rico.—Replacement of roofs of 4 quarters buildings and garage. Elevation of two roadway storm drains, \$13,000.

Tampa, Florida.—Exterior and interior painting of all structures and repair of boathouse, \$6,000.

BUREAU OF HEALTH SERVICES

Repairs and improvements

1968 appropriation estimate.....	\$925, 000
1. Boston, Mass.:	
Incinerator reconstruction.....	15, 000
Fire exit construction.....	105, 000
Total.....	120, 000
2. Detroit, Mich.:	
Emergency fire protection.....	37, 500
Emergency water distribution.....	16, 500
Total.....	54, 000
3. New Orleans, La.: Fire escapes.....	45, 000
4. Tampa, Fla.:	
General renovation.....	128, 500
Elevator repairs.....	22, 500
Total.....	151, 000
5. Chicago, Ill.: Relocation of clinic—Adaptation of new space for the clinic which must be removed from the former PHS hospital building	455, 000
6. Staten Island, N.Y.: Remodeling at Staten Island, N.Y., for multi-phasic screening.....	100, 000

NATIONAL INSTITUTES OF HEALTH

NIH Animal Center—Construction

1968 Appropriation estimate----- \$120, 000

In 1968, \$120,000 is requested to complete construction of Phase IA of the NIH Animal Center project.

At the time of submission of the tentative drawings by the Architect/Engineer in August 1964, the accompanying A/E estimates of cost exceeded available funds by approximately \$244,000. By careful evaluation and reappraisal of needs, it has been possible to reduce the \$244,000 original deficit to \$120,000. This amount is required to complete construction of Phase IA.

Combined service facility—planning

1968 appropriation estimate----- \$200, 000

In 1968, \$200,000 is requested for planning of the NIH Combined Services Buildings for certain NIH service activities including the fire department, vehicle repair and maintenance, and procurement and supply functions. The total cost of this facility is estimated at \$3,000,000.

The NIH Fire Department, vehicle servicing, and supply activities have been located in their present structures for several years. However, the continued addition of physical facilities has reduced the effectiveness of these service functions. As a result they are now situated in less than desirable locations, lacking room for expansion and interfering with research program activities.

Both the present fire department and vehicle repair servicing functions are poorly situated in Service Building 12. The cul-de-sac access created by extensions to contiguous buildings, coupled with increased traffic volume in this area, has created a severe handicap for the Fire Department when responding to an emergency. The additional time required to negotiate the present routes may seriously affect the loss of life or property.

The renovation of Building 12 absorbed the garage space into the expansion for the Division of Computer Research and Technology. The noise and odor problems created by vehicle servicing make it imperative that the garage be relocated.

New construction projects on the Bethesda reservation, for which planning or total funds have been appropriated through 1966, will substantially increase the total gross square feet of the existing facilities and the number of laboratories on the NIH reservation.

The combined Services Facilities building would consolidate all these service functions into a centrally located structure, equally accessible to all areas of the reservation, and with the necessary space to service the increase in laboratories and related facilities.

Specifically, this facility would provide space for:

1. An extension to the previously authorized Phase I warehouse consisting of an additional 62,000 gross square feet. This space will include housing for the total office operations of the Supply Management Branch in addition to the general storage space required.

2. Housing functions of the Vehicle Repair Shop and Transporting Unit of the Transportation Section, Office Services Branch. The 25,000 gross square feet allocated to this activity will accommodate the vehicle repair and maintenance operations (which services a fleet of 165 vehicles), including the wash and grease rack, stockroom, paint spray room, storage area, locker room, and office space. An additional 5,000 square feet would be developed to contain the gas station operation, including gasoline and diesel oil dispensing and storage facilities.

3. Adequate facilities for the total fire prevention and fire protection activities of the Plant Safety Branch, including space for the fire marshal, emergency, and service units. Functions to be housed within approximately 7,000 gross square feet are the engine room, offices, dormitory, watch and squad room, and storage.

Estimated progress schedule

Design :	
Award	December 1967.
Completion	May 1969.
Construction :	
Award	July 1969.
Completion	September 1971.

Addition to multilevel parking facility, general office building—Planning

1968 appropriation estimate..... \$100,000

In 1968, planning funds of \$100,000 are requested for the design of an addition to the multilevel facility previously authorized to serve the parking population of the General Office Building. This addition is intended to accommodate 550 cars and would bring the total capacity of the General Office Building Multilevel Parking Facility to approximately 1200 cars. With the permanent on-grade parking of 550 spaces, a total of about 1750 spaces would then be available, sufficient to satisfy the parking needs of the employees working in Building 31 and other nearby buildings. This addition to the previously authorized facility would be on the same, or an immediately adjacent, site.

Construction will be similar to that of the previously authorized structure: lighting and ventilation as required; no elevators; and exterior finishes to be compatible with adjacent buildings. Topography may permit distribution of traffic directly to access roads from each level; if not, interior ramps will be required.

Construction funds of \$1,350,000 will be required in 1969.

Estimated progress schedule

Design :	
Award	November 1967.
Completion	March 1969.
Construction :	
Award	May 1969.
Completion	July 1970.

NIH incinerator facility—Construction

1968 appropriation estimate..... \$2,080,000

Planning funds of \$270,000 were appropriated in 1967 and construction funds of \$2,080,000 are requested in 1968 for a municipal type incinerator plant, rated at an approximate burning capacity of 175 tons per day.

At the request of the Bureau of the Budget, a consulting engineering firm was engaged to study the feasibility of constructing an incinerator plant which would handle the combined wastes from the National Institutes of Health, (NIH), the National Naval Medical Center (NNMC), and the Walter Reed Army Medical Center (WRAMC).

The final report on the incinerator study proposed an incinerator facility for the joint use of NIH, NNMC, and WRAMC to be located on available space at the Walter Reed Forest Glen Annex. The estimated construction cost was reduced from \$3,270,000 to \$2,080,000 based on information furnished by the engineering report.

NIH would provide funds for the entire cost of the incinerator planning and construction, including the cost of alterations necessary on the NIH reservation for revised handling and collection of wastes to conform with the proposed new incinerator operation. The Department of the Army would transfer title of the land required to the Department of Health, Education and Welfare, and the completed facility would be operated by NIH.

Estimated progress schedule

Design :	
Award	June 1967.
Completion	February 1968.
Construction :	
Award	April 1968.
Completion	July 1969.

1622 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Repairs and improvements

1968 appropriation estimate.....	\$500,000
1. NIH Reservation.....	325,000
a. Construction of a small storage addition, Building 13; installation of roof over portion of salvage yard; installation of vinyl asbestos tile, Building 4.....	15,000
b. Installation of freight elevators, Buildings 2 and 3.....	210,000
c. Replacement of 25 percent of main air conditioning filters, Clinical Center.....	100,000
2. Rocky Mountain Laboratory, Hamilton, Mont.....	175,000
a. Replacement of second of three boilers.....	90,000
b. Painting of interior and exterior of all buildings.....	85,000

NATIONAL LIBRARY OF MEDICINE

Repairs and improvements

1968 appropriation estimate.....	\$75,000
New study rooms.....	20,000

The Library has only nine study rooms. The legitimate demand for study rooms by scientists, scholars, bibliographers, historians, and others using the National Library of Medicine for long-term research projects greatly exceeds the supply. Implementation of the Medical Library Assistance Act, particularly those sections authorizing support for research and development and special scientific projects, make alterations for about 10 additional study rooms urgently necessary.

Improvements to the main reading room.....	\$20,000
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These funds are required to enlarge the service desk in the main reading room, to enlarge the annunciator board so that it will have as many numbers as there are seats, and to automate the book delivery system.

Site preparation for new computer.....	\$35,000
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A new computer will be installed in 1968. Renovation of the computer site and provision of conduits to remote indexer terminals will be required.

NATIONAL INSTITUTE OF MENTAL HEALTH

Repairs and improvements

1968 appropriation estimate.....	\$990,000
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Fort Worth, Tex.:

Enclose stairwells.....	41,300
Combustion control.....	35,000
Replacement of fire protection water mains.....	61,700
Insulate attics.....	55,000
Install elevator, sidewalk type.....	19,400
Replacement of primary switchgear.....	136,300
Replacement of electrical feeders.....	106,300
Total	455,000

Lexington, Ky.:

Can wash and sterilizing building.....	10,000
Flammable storage building.....	10,000
Refrigerated garbage room.....	9,000
Boiler replacement.....	506,000
Total	535,000

INTRODUCTION OF WITNESSES

Senator HILL. Now we shall hear Mr. Burgess.

Dr. GEHRIG. Mr. Chairman, while Mr. Burgess is coming up, I wonder if you would mind if I introduce him to you.

Mr. Burgess is our Chief of Buildings and Facilities, a new organizational element in the Office of the Surgeon General that was formed last year. We brought together into this office the expertise that we had in architecture and engineering for facilities of the Public Health Service from a variety of program areas, except the National Institutes of Health, which had an excellent working organization.

Mr. Burgess is well informed on the architectural engineering area, and he is supported by representatives from each of the key bureaus in which these activities are going on. These representatives would be responsive to program issues that might be related to this appropriation.

Senator HILL. Very good, sir. Mr. Burgess.

Mr. BURGESS. With me at the end of the table is Dr. Prindle, Director of the Bureau of Disease Prevention and Environmental Control; Dr. Walsh on my right, Director of the Division of Direct Health Services; Mr. Richard Seggel, of the National Institutes of Health, and Dr. John Green, Deputy Director of the Division of Dental Health.

Senator HILL. All right, sir, you may proceed. Glad to have all of you gentlemen here

MAJOR DESIGN OR CONSTRUCTION PROJECTS

Mr. BURGESS. Mr. Chairman, the estimate for the appropriation, "Buildings and facilities," includes funds for all proposed design and construction projects recommended for 1968 for the Public Health Service except those for the Indian health program. The estimate, in the amount of \$10,715,000, provides for the design or construction of six major projects in the sum of \$6,873,000 plus repair and improvement funds for the whole Public Health Service other than to facilities concerned with the Indian health program in the sum of \$3,842,000.

DENTAL HEALTH CENTER, SAN FRANCISCO

The largest item in our design and construction estimate is \$2,558,000 for the construction of the dental health center addition in San Francisco. This facility, for which planning funds were appropriated in 1966, will provide needed space for expanded programs in the areas of research, continuing education, prevention and control studies, and for the clinical assessment of dental materials.

NATIONAL CENTER FOR AIR POLLUTION

A provision of the Clean Air Act (Public Law 88-208) authorized "the Secretary of the Department of Health, Education, and Welfare to construct such facilities as are necessary to carry out the provisions of the act."

For this purpose we are asking that \$1,815,000 in funds be provided for planning the National Center for Air Pollution Control, to be located in the research triangle, North Carolina.

The activities to be provided for in the proposed facility include research and development programs, technical services, and training activities of the Center. The research and development programs include activities concerned with the development of control technology, research on the effects of air pollutants on health, and the development of standards and criteria for air quality and air pollutant emissions.

The disciplines involved in these programs include the physical and engineering sciences, and statistical, medical, epidemiological, and other biological activities. Technical services and short-course training activities in support of Federal, State and local government air pollution control would also be headquartered at the proposed facility.

Approximately 450,000 gross square feet of space to provide administrative and laboratory-type facilities will be required for about 1,000 people who will be needed to carry out these programs.

NIH ANIMAL CENTER

In accordance with our plan to develop the NIH Animal Center through phased construction, this estimate contains \$120,000 to complete the construction of phase IA consisting of mental health animal research laboratories and a primate quarantine building. The architect-engineer, in developing the design to meet the program requirements, now estimates the cost of the facility to be \$1,479,000, which exceeds available funds by approximately \$244,000. Every effort has been made to reduce this deficit while meeting the minimal needs in laboratories and animal buildings, and we have managed to reduce the \$244,000 required to our request of \$120,000.

Senator HILL. That \$120,000 will meet your needs?

Mr. BURGESS. Yes, sir; that will meet the minimal needs in our laboratory and animal building.

NIH COMBINED SERVICE FACILITY

We are recommending that \$200,000 be provided for the planning of a combined service facility to serve NIH needs in supply activities, vehicles servicing and repair, and in fire prevention and protection. The estimated construction cost will be \$2.8 million.

By the middle of 1971 laboratory space at NIH will have increased by approximately 40 percent. This proposed expansion in NIH servicing capacity is essential if this new laboratory space is to be adequately supported. In addition, the proposed facility will correct certain existing problems. Both the present fire department and the vehicle-servicing activity are surrounded by extensions to buildings. The problem of access to this area creates an obstacle for fire apparatus responding to an emergency. The noise and odors from the vehicle-servicing area are a nuisance to occupants of adjacent structures.

The combined-services building would be located centrally and would be more accessible to all areas of the reservation. Its activities

will include shipping and receiving, central stores, and warehousing space, vehicle repair and maintenance, gas station operations, and an engine room, dormitory, watch and squad room, and storage.

Senator HILL. You really need this very much, don't you?

Mr. BURGESS. Yes, sir; we are seriously crowded there.

Senator HILL. You really need it.

Mr. BURGESS. It is essential to the protection of the reservation.

EXTENSION OF NIH MULTILEVEL PARKING FACILITY

Planning funds of \$100,000 are requested to extend the multilevel parking facility authorized in 1966 to serve the General Office Building at NIH. This extension will serve the increased parking population caused by the construction, now underway, of an addition to the General Office Building. The original parking facility was planned to accommodate 650 cars and the proposed extension will handle another 550 vehicles.

Senator HILL. Everybody has his own car today, doesn't he?

Mr. BURGESS. We have quite a number with cars, sir. We are in the suburbs and public transportation is not good.

Senator HILL. I would imagine public transportation to be pretty slow out there.

Mr. BURGESS. It is slow or nonexistent for many people who live beyond NIH and many of our employees live out that way.

Senator HILL. Where there is very little transportation.

Mr. BURGESS. None whatsoever in many cases.

The total cost of this extension, including planning funds, will be \$1,450,000.

INCINERATOR PLANT

Last year Congress provided an appropriation of \$270,000 for the planning of a replacement incinerator plant to be located on the NIH reservation in Bethesda. Because of the needs of the National Naval Medical Center and the Walter Reed Army Medical Center for similar incinerator facilities, a consulting engineering firm was engaged to study the feasibility of constructing a single plant to handle the combined refuse from the three installations.

The consultants have recommended that a single incinerator with a capacity of 175 tons per day be located on the grounds of the Forest Glen Annex, Walter Reed Army Medical Center, to serve the three units. All the organizations involved have concurred in this recommendation and the Department of the Army has indicated that the necessary land can be made available. The \$2,080,000 requested by the Public Health Service will support the entire cost of construction.

Senator HILL. In other words, that will be the whole cost?

Mr. BURGESS. Yes, sir; that is the total cost.

REPAIR AND IMPROVEMENT PROJECTS

The last item in our request is for \$3,842,000 to support a large number of identified repair and improvement projects at the various field stations of the Service.

Senator HILL. Give me an illustration of what you need at one of these field stations.

Mr. BURGESS. We need boiler replacements at CDC, Atlanta; we need to repair and extend our seawall at Dauphin Island, Ala., Shellfish Research Facility.

Senator HILL. That is a pretty new station. It just started in 1963, as I recall, didn't it?

Mr. BURGESS. Yes, sir; it did. The seawall was well designed but unfortunately storm and hurricane waters have gotten behind it and it needs to be extended in order to protect the island and the facility.

DEFERRAL OF PHASE TWO OF ANIMAL CENTER

Senator HILL. You certainly had a big cut in the NIH Animal Center, did you not?

Mr. BURGESS. From \$244,000 to \$120,000, sir.

Senator HILL. According to this, the budget was \$7,632,000, and the Budget Bureau allowed you \$120,000.

Mr. BURGESS. The \$7 million is for our total facility. We are building it in phases.

Senator HILL. Did you ask for all of it?

Mr. BURGESS. We asked for phase two money and this was deferred because the Bureau of the Budget had earlier asked us to make a study of the comparative cost of purchasing animals versus raising our own. This study has been made and forwarded to them, but pending that study completion they requested deferral of phase two of the animal center construction funds.

Senator HILL. You have sent the study to the Budget Bureau?

Mr. BURGESS. Yes, sir; it has gone forward since the budget has been prepared.

Senator HILL. But you have had no comment from the Budget Bureau since you sent in your study?

PLANNING FUNDS

Mr. SEGGER. No, we expect to meet with them shortly. Senator, we have planning funds for this phase of the construction, but we do not have those funds apportioned to us, pending the determination of what the outcome of this study is. If we can go forward with planning, then we can come in later with a construction estimate to this committee.

Senator HILL. You think they will let you go forward with your planning?

USE OF COMMERCIAL SOURCES FOR SUPPLYING ANIMALS

Mr. SEGGER. I think so, sir. I think it is largely going to be a question of size of facility. They feel we should explore thoroughly the possibility of outside commercial operators providing some of the animals to us. We made a thorough study of this and we think we have presented solid evidence to the Bureau to support the facilities we have in mind. At the same time, we plan to make maximum use of all the opportunity of which we can avail ourselves to use commercial sources. But there is a limit to it.

Senator HILL. Furthermore, how much increase in the overall cost would it be to use these commercial services?

Mr. SEGSEL. That is a basic problem—

Senator HILL. That is a problem, isn't it?

Mr. SEGSEL. Yes, sir; and we have to furnish breeder stocks to them in order to put them in production. It is a complicated technical problem providing animals for research, as you probably are aware.

There are a lot of different strains and most commercial operators are not prepared to do this.

Senator HILL. So you are presented with a problem, are you not?

Mr. SEGSEL. Yes, sir.

Senator HILL. But you feel that you are working toward the solution?

Mr. SEGSEL. I feel we are, sir. We think we can reach an agreement with the Bureau on this.

Senator HILL. You think you can reach an agreement with the Budget Bureau?

Mr. SEGSEL. Yes, sir; we have every confidence we can.

COMMUNICABLE DISEASE BUILDING ADDITION

Senator HILL. I notice you ask for a communicable disease addition.

Mr. BURGESS. This is a second addition. The first one has just been completed and we have already outgrown it.

Senator HILL. How much was invested in the present building?

Mr. BURGESS. I believe between \$9 and \$11 million was the total project cost on the first addition.

Senator HILL. You ask for \$1,241,000?

Mr. BURGESS. Yes, sir.

Senator HILL. You got none of that at all?

Mr. BURGESS. No, sir; this was a request for planning funds.

Senator HILL. Does planning cost that much?

Mr. BURGESS. This request also included purchasing adjacent land that is quite expensive. The surrounding area is now developed. We have built to the limits of the present CDC property and it would take several hundred thousand dollars to purchase the adjacent land.

Senator HILL. That much?

Mr. BURGESS. Yes, sir.

COMMUNICABLE DISEASES CENTER AT LAWRENCEVILLE

Senator HILL. The same thing happened to the request for the Communicable Diseases Center at Lawrenceville?

Mr. BURGESS. Yes, sir; this was a request for additional grazing area and fencing of the grazing area. We wanted to increase the acreage for the animals we have there, primarily horses and mules used in research.

Senator HILL. No chickens?

Mr. BURGESS. No chickens; no, sir.

Senator HILL. Was this all to go to increase the land?

Mr. BURGESS. The great bulk of it, sir; a small percentage would be for fencing in the horses.

Senator HILL. I see.

They allowed you the full amount for your Bureau of Disease Prevention and Environmental Control?

Mr. BURGESS. In repairs and improvements?

Senator HILL. Yes, sir.

Mr. BURGESS. Yes, sir.

Senator HILL. They cut you down some in the Bureau of Health Services, though, didn't they?

Mr. BURGESS. Yes, sir; the guidelines established by the Bureau of the Budget restrict us to health and safety hazards in our hospital system, pending its moderization.

Senator HILL. Pending the moderization?

Mr. BURGESS. Yes, sir.

Senator HILL. Of your hospitals?

Mr. BURGESS. Yes, sir.

REDUCTION IN REQUEST FOR NIH

Senator HILL. The National Institutes of Health, you got quite a reduction there, too, didn't you?

Mr. BURGESS. Yes, sir; it is substantial.

Senator HILL. Also for the National Institute of Mental Health; is that right?

Mr. BURGESS. The National Institute of Mental Health; no, sir. They got what they requested. These are repair and improvement projects at Forth Worth and the Lexington hospitals.

Senator HILL. And they got the full amount there?

Mr. BURGESS. Yes, sir.

EFFECT OF REDUCTION

Senator HILL. What would be the effect of the reduction on the National Institutes of Health?

Mr. BURGESS. We will have to delay certain projects. I believe there were elevator installations and repairs that would be deferred.

Mr. SEGGER. We will simply have to phase these to another year.

Senator HILL. What are most of these projects?

Mr. SEGGER. These have to do with installation of freight elevators, things of that kind. We have to replace a boiler at the Rocky Mountain Lab, replace 25 percent of the main air-conditioning filters in the Clinical Center, install freight elevators in two of our lab buildings, modernize cane washing equipment and so forth. Some of these we will be able to do this year, but we have other projects that we will have to postpone until another year. This is a continuing problem, you realize, Senator Hill. Our plant is aging in many respects; even though we have some new buildings going up, we also have some aging buildings needing repairs and improvements.

SOUTHEASTERN RADIOLOGICAL LABORATORY

Senator HILL. What about your Southeastern Radiological Laboratory. I notice you were not allowed any of your planning funds there at all.

Mr. BURGESS. No, sir; that was deleted by the Bureau of the Budget.

Senator HILL. What would be the effect of that?

Mr. BURGESS. We will have to continue on in the temporary old buildings that now house our laboratory. As you probably know, Senator, these are buildings from World War II. The Communicable Disease Center used them for several years and moved. The radiological health program moved in and the buildings haven't gotten any better through the years.

Senator HILL. The truth was they were not constructed to get better; they were what we called temporary wartime construction. The war has been over for 22 years now, hasn't it?

Mr. BURGESS. Yes, sir.

Senator HILL. Just about; the war in Europe for 22 years. It will be 22 years for Japan in August.

Mr. BURGESS. Right.

Senator HILL. This was for planning funds, wasn't it?

Mr. BURGESS. For planning; yes, sir.

Senator HILL. How much does it cost you to try to keep the old wartime buildings up?

Mr. BURGESS. They are quite expensive.

Senator HILL. I would think so.

Mr. BURGESS. We hesitate to put a lot of money in there because we hope we can get a replacement facility. We do the minimum amount necessary to keep them operable.

Senator HILL. But you cannot get a replacement until you first make your plans; is that right?

Mr. BURGESS. That's right; it would be a year to 18 months in design, perhaps as long as 2 years.

Senator HILL. Making your plans?

Mr. BURGESS. Yes, sir; to have an architect-engineer develop the design.

COST OF REPLACING BUILDING

Senator HILL. Have you any idea, you may not have until you get your plans, what the approximate cost might be of a modern replacement building?

Mr. BURGESS. Yes, sir; we have estimated the cost at \$3,854,000. The \$203,000 requested would support the design. We would come back in a subsequent year for the construction.

Senator HILL. Just for the design and planning?

Mr. BURGESS. Yes, sir.

Senator HILL. Were you going to put your new building pretty much on the site of where your old building now exists?

Mr. BURGESS. We would put it somewhere in the Montgomery area. We have not selected a site. We would not start until we got the authorization to proceed with the design, and then would begin investigating the sites.

Senator HILL. I see.

CARVILLE

The Budget Bureau knocked out most of your funds for Carville, practically all of it.

Mr. BURGESS. The construction funds; yes, sir.

Senator HILL. What will be the effect of that?

Mr. BURGESS. Our present design schedule has been adjusted within the last month, indicating we would not need the funds before fiscal

year 1969. This is a modernization of existing buildings, Senator, and development of what we call the initial concept takes some time. We have had some initial delays.

Senator HILL. You have had some delays?

Mr. BURGESS. Yes, sir; delays in deciding which ones are to be torn down and which ones modernized, so the fiscal year 1969 appropriation would be satisfactory for construction funds.

Senator HILL. It would be?

Mr. BURGESS. Yes, sir.

Senator HILL. Senator Byrd, any questions?

SITE FOR APPALACHIAN CENTER FOR ENVIRONMENTAL STUDIES

Senator BYRD. Yes, sir.

Would you please state for the record the status of the negotiations for a site for the Appalachian Center for Environmental Studies at Morgantown?

Mr. BURGESS. Yes, sir.

Our representative was there approximately a month ago looking over several sites the university had offered. The Public Health Service feels that what is identified as site 1-A immediately behind the University of West Virginia Medical Center is the most satisfactory site.

University officials feel that the 13-acre tract we were interested in cannot be given to us, because it would interfere with plans for expansion of their medical school campus.

SITE 1-A

Senator BYRD. Is that site 1-A?

Mr. BURGESS. Yes, sir.

Senator BYRD. That is most satisfactory, but the University feels it cannot let you have that?

Mr. BURGESS. Right. Dr. Heflin, the acting president of the university, suggested that we consider a 7-acre tract which represents a lower part of the existing 13-acre tract, the 7 acres toward Willowwood Drive.

Senator BYRD. Let's talk about site 1-A a little longer. Why can't the university let you have that?

Mr. BURGESS. They have not stated specifically, but we got the impression that they have a master plan for the development of their medical school campus.

Now, the 13-acre tract stretches from Willowwood Drive up immediately behind the medical center hospital. Their next increment in expanding this medical center, as we understand it, will carry them out onto the 13-acre tract.

LOWER PORTION OF SITE 1-A

This is why Dr. Heflin suggested we move, if you will, down the hill and consider only a 7-acre tract.

Senator BYRD. Which is referred to as what?

Mr. BURGESS. I can only describe it as approximately half of site 1-A, what we call the lower portion of site 1-A.

Our technical personnel have looked it over and we believe that we could get a facility on this site and give us room for parking and possibly some future expansion.

The only obstacle to this now, Senator, is that while the university has contracted to buy this land, it belongs to a country club. There is a provision in the purchase contract to the effect that the country club will have use of this land through 1969.

The land is a golf course and unfortunately the 7-acre tract that we are now considering contains two golf greens. Dr. Heflin has indicated that the university does not have any money to relocate the golf greens and has asked us, in conversation, if the Public Health Service would pay these relocation costs if we were offered this tract.

We have talked to our General Counsel's Office and it is their opinion that we cannot use any of our funds to pay for relocation of the greens without specific authorization from Congress. This is where the matter stands at the present time.

CORRESPONDENCE WITH PRESIDENT OF UNIVERSITY

Dr. PRINDLE. May I add, Senator, Under Secretary Wilbur Cohen has written the acting president of the university, indicating our preference for this 13-acre site, but our willingness to negotiate with respect to the 7-acre portion of it. Also we have asked the university to describe more clearly the metes and bounds of this exact property since we have not been provided with these kinds of measurements.

We have not received a response from the university.

Senator BYRD. I don't believe I have a copy of the letter written by Under Secretary Wilbur Cohen.

Dr. PRINDLE. We will be happy to provide it for the record.

Senator BYRD. I was supposed to have been provided with correspondence on all of these developments.

Dr. PRINDLE. Yes, sir, you were.

Senator BYRD. I would like to keep up with these developments.

What was the date of the letter by Wilbur Cohen?

Dr. PRINDLE. It was last week, but I am not certain the exact date it was signed.

Senator BYRD. You have not had a response from Dr. Heflin?

Dr. PRINDLE. No, sir.

RELOCATION OF GOLF GREENS

Senator BYRD. What did Mr. Cohen have to say about the relocation of the golf greens?

Dr. PRINDLE. I don't recall that mention of this was in the letter, merely that we would be willing to negotiate with them.

Senator BYRD. Well, if those have to be relocated, you have reached a hiatus, have you not?

Mr. BURGESS. Yes, sir.

Senator BYRD. What do you suggest, Dr. Prindle?

Dr. PRINDLE. Well, pending a response from the university at this point, I am a little at a loss to know where to go from here.

If we do this problem of relocating these greens, we first have to reexamine how rapidly do we need to attain completion of the building

itself with an alternative of putting personnel there in rental space, as some of them are now. As you are aware, the university has been very helpful, providing space on some of their wards and in their laboratories of the medical school. They have actually expended a considerable sum of money renovating some of the facilities for our use.

I believe that we can continue to expand and carry out the programs pending a later decision on the exact construction of the facility. I think one of the problems that would have to be faced during the negotiations is whether some of the construction could be started in spite of the location of the greens.

Until the metes and bounds are better described, I really cannot make a judgment.

COPY OF MR. COHEN'S LETTER

Senator BYRD. I want to say that Mr. Arcilesi has certainly made every effort to resolve this site location problem and he has done everything he possibly could to keep me informed. I am sorry that I have not had a copy of the letter written by Mr. Cohen.

Let's have a copy of it for the record here, please.

Senator HILL. A copy for the record at this point?

Senator BYRD. Yes, please.

(The letter follows:)

THE UNDER SECRETARY OF HEALTH, EDUCATION, AND WELFARE,
Washington, D.C., April 11, 1967.

Dr. HARRY B. HEFLIN,
*Acting President, University of West Virginia,
Morgantown, W. Va.*

DEAR DR. HEFLIN: Planning of the proposed Appalachian Health Station to be located in Morgantown on land to be provided by the University, has proceeded to the point where an early decision on a site for the facility is needed. Based on the requirements for the Station, the need for a location close to the Medical Center, and existing topographical and environmental conditions, responsible staff of the Public Health Service have determined that either of two sites would be acceptable for the location of the Appalachian Health Station. No other sites so far identified appear suitable.

I should like to request the University to make available to the Federal Government for purposes of a site for the Public Health Service facility the tract which has been described in staff discussions as site 4A. This is the preferred location.

If the above site is for any reason not available in total, an alternative would be approximately that portion of site 4A farthest from the Medical Center and about seven acres in area. With regard to relocating the greens of the golf course, now a part of the potential site, the General Counsel's office is of the opinion that funds cannot be expended by the Government for this purpose without specific authorization by Congress.

I understand that the exact metes and bounds of these sites have not yet been determined. I hope I may hear favorably from you in the near future in respect to one of these sites, and that the exact boundaries to describe the appropriate tract may be worked out promptly so we may proceed quickly to the detailed planning of this important project.

Sincerely,

WILBUR J. COHEN,
Under Secretary.

FUNDS APPROPRIATED IN 1966 AND 1967

Senator BYRD. There is nothing in the budget for this item, is there?

Dr. PRINDLE. That's right, we already have money that has been appropriated in 1966 and 1967, totalling approximately \$350,000, which can be used for predesign and design phases of this.

In view of the delays that we have had, we feel that a fiscal year 1969 request would be appropriate for the actual construction money, and so we would assume that we would come to you in 1969 for those funds.

REQUEST FOR CONSTRUCTION FUNDS

Senator BYRD. The Public Health Service actually requested construction moneys of the Department, did it not?

Dr. PRINDLE. That is correct; yes, sir.

Senator BYRD. For this fiscal year?

Dr. PRINDLE. Right.

In view, however, of the obvious things that were happening, these delays, the Department felt that we could wait until 1969 and we concurred in this view.

Senator BYRD. So what you are saying is that had this site problem been resolved in time, there is a good chance that the Department would have allowed the \$4,260,000 requested by the Public Health Service for construction?

Dr. PRINDLE. This is quite possible.

Senator BYRD. And it is quite possible that the Bureau of the Budget would have approved it and that the President would have included this amount in his request?

Dr. PRINDLE. Right.

Senator BYRD. And we would have been able to at least consider the request, another \$4,262,000 for construction of the facility.

ESTIMATED COMPLETION DATE

What was the original date of completion, scheduled date of completion?

Dr. PRINDLE. I don't know what the original date was. We are now estimating July 1970 as a likely date, assuming that we can move forward very shortly. We have gone ahead, prepared a program of requirements and submitted this to the Bureau of the Budget assuming that some resolution will be forthcoming very rapidly with respect to the site. We have sent forward our request for the apportionment of these funds, which we assume will come, provided that the program requirement is approved; so we are trying to move as rapidly as we can on this.

TIME LOST DUE TO UNAVAILABILITY OF CONSTRUCTION FUNDS

Senator BYRD. Had the construction moneys been included in this budget as originally hoped for by the Public Health Service—and this would have meant, of course, that the site problem had been resolved—when would the facility have been completed?

Dr. PRINDLE. I would have to guess. Maybe Mr. Burgess knows.

Mr. BURGESS. It would probably have been 3 or 4 months earlier than it will be now. This would be perhaps in April of 1970 rather than July. It is this critical 3-month period that is throwing the estimated design schedule such that we will not need the construction money until early 1969 rather than needing it in late 1968.

In other words, if we had been able to move in December, as our original schedule hoped for, and started into design then, Senator, we

would have moved our construction completion and our design completion backward by that number of months.

Senator BYRD. You mean we only lose 3 or 4 months insofar as the scheduled completion date is concerned, even though we are going to lose a year in the appropriation of construction money?

Mr. BURGESS. Well, when we asked for the appropriation of construction money in fiscal 1968 originally, it was predicated on our design being complete in, let's say, April of 1968. Now the start of our design has moved from December of 1966. It is now April, it will perhaps be early May before we start design; so instead of design completion in late April 1968, it will probably be in August or September of 1968, which would put it into fiscal 1969, would it not?

The shift of 3 or 4 months moves it essentially from late 1968 to early 1969. That is essentially what I am trying to say.

Senator BYRD. Are you held up on your initiation of design until you get this site problem resolved?

Mr. BURGESS. Yes, sir; the architect-engineer has to know the specific site, because he has to locate the building in the best way on the site and do his foundation work and his test borings to make sure we can build it in the exact location we desire.

EFFECT OF INCLUDING CONSTRUCTION FUNDS IN BILL

Senator BYRD. If the \$4 million-plus were included in this bill, would you be able to initiate some construction prior to the date when you might otherwise initiate construction if the money is not included?

Mr. BURGESS. Well, sir, we in the Division of Buildings and Facilities could expedite the project and put a priority on it, to move it if this were done.

Mr. CARDWELL. I think the critical period here is June 30, 1968. In order to justify an appropriation of moneys in this bill, we would need some assurance that there was an ability to award a construction contract and to start construction prior to June 30, 1968.

If, for example, the construction start-date is in July, August, or September, then the 1969 appropriation would catch it easily. The critical period being the close of the one fiscal year versus the opening of another fiscal year. The appropriation process should not delay the matter.

It is really a matter of design and the ability to actually award a construction contract. When can we award that contract? That is the critical question.

Senator BYRD. Are you saying that the inclusion of the money in this bill would not, under any circumstances, accelerate the initiation of construction?

Mr. CARDWELL. Not unless the Public Health Service could give some greater assurance that design could move to a point where a construction contract could be awarded by June 30, 1968. The evidence that we have seen thus far does not so indicate.

It would indicate that construction start will occur in the first quarter of fiscal year 1969 or thereafter.

Would you speak to that, Mr. Burgess?

Mr. BURGESS. This would be true. Of course, again it is predicated on when can we identify the site.

The Public Health Service is going to administer this design contract rather than handling through the General Services Administration. We decided on this procedure to expedite it and spread out some of our projects rather than have them all grouped in a short time period.

TIME NEEDED TO FINISH DESIGN

Our estimate for a normal schedule, if everything goes smoothly, is approximately 13 months. Now, if we get started in May, this means by late May of 1968 or perhaps early June of 1969, we would finish the design, provided everything went well.

The only problem here, Senator, is there always seems to be some slowdown in one aspect of the design or another. For instance, we may go into test borings on the site and find that the underlying rock is not stable enough and we have to move and do a second job of test boring somewhere else on the site.

If you are asking me can we do it in 1968, everything must go like clockwork and we have to identify the site, the specific site, and have an offer within 2 weeks. We could probably do it.

Senator BYRD. If you had an offer of the site within 2 weeks.

Mr. BURGESS. Within 2 weeks and it was a straightforward, normal design. If this doesn't occur, it is going to slip over into fiscal year 1969, sometime in July or August, depending upon the degree of problems.

Senator BYRD. And how long will you need to complete the design once the site has been determined?

Mr. BURGESS. Our estimate is 13 months if everything goes well and if we encounter no problems in developing the design.

We do have to coordinate this design with the university and with their architect. In other words, whatever exterior treatment our architect gives, it has to be compatible with the architectural scheme of the university. We have to tie in with their sewer system with their electric utilities and water and this type of thing.

Senator BYRD. So you are saying it would be May 1968 before the design could be completed?

Mr. BURGESS. That would be the earliest.

Senator BYRD. You say at the earliest?

Mr. BURGESS. Yes.

Senator BYRD. At the latest, what would it be?

Mr. BURGESS. Predicated upon getting our site within 2 weeks?

Senator BYRD. Yes.

Mr. BURGESS. I would think about the middle of August.

Senator BYRD. The middle of August?

Mr. BURGESS. Yes.

Senator BYRD. I thought you used a June 1969 date a moment ago.

Mr. BURGESS. You said the latest date. I am considering what problems we may have and a normal slippage that we often experience in our design schedules.

Senator BYRD. What was the June 1969 date with reference to?

Mr. BURGESS. Earlier in our discussion?

Senator BYRD. You discussed two dates in the same sentence—May 1968 or June 1969.

Dr. PRINDLE. I think, Senator, if I may, he made a verbal slip. I think he was thinking in terms of fiscal years rather than calendar years.

Mr. BURGESS. If I said June of 1969, I should have said June of 1968. I'm sorry, sir.

Senator BYRD. What you are saying is it is highly unlikely you could use any construction moneys if they were included in this bill?

Mr. BURGESS. Until fiscal year 1969; yes, sir.

ADEQUACY OF FUNDS FOR PLANS AND SPECIFICATIONS

Senator BYRD. Will the \$350,000 take care of the plans and specifications?

Mr. BURGESS. More than take care of them; yes, sir.

Mr. CARDWELL. Off the record a second.

(Discussion off the record.)

Senator HILL. On the record.

COST OF RELOCATING GOLF GREENS

Senator BYRD. What would be the cost of the relocation of the golf greens?

Mr. BURGESS. We have been trying to find this out from the local country club. Mr. Arcilesi has been investigating and he estimates in the neighborhood of \$20,000 to \$25,000.

Senator BYRD. What kind of authorization would you have to have? Could this committee authorize it?

Mr. BURGESS. I can't answer that, sir. We got our opinion from our General Counsel's office and his statement said that the Public Health Service cannot pay for improvements to private property without specific authorization of Congress.

Senator BYRD. Would this be authorization by the Legislative Committee or by this committee?

Mr. BURGESS. Sir, I am not an attorney. I really am not knowledgeable in that area.

Senator BYRD. Does anybody know?

Mr. CARDWELL. It would be subject, it would seem to me, to a point of order. Depending on how the committee handled the matter, there are ways in which it can be done, obviously.

DISCUSSIONS WITH UNIVERSITY

Senator BYRD. Has the Public Health Service satisfied the university with regard to all of the information that the university has requested as to types of programs and so on which would be conducted at the center, so as to enable the university to accelerate its decision regarding a site?

Dr. PRINDLE. We believe we have, Senator. We have had numerous discussions. I, myself, have gone down and talked with them. Several of our program representatives have been down. I have talked with Dr. Heflin fairly recently by telephone and asked whether there was further information desired. He responded negatively. So I assume they feel satisfied with respect to the kinds of programs we plan to have there and the activities that would be carried out in this facility.

Mr. CARDWELL. I don't think we want this to sound as if there was a we-they relationship developing here. It seems to me that what is needed is a cooperative relationship, and it seems, thus far, both parties have worked toward the same objective.

Senator BYRD. Can you supply an estimate as to the amount of money required for the relocation of the golf greens?

Mr. BURGESS. Yes, sir; we will do that.

(The information follows:)

The estimated cost of relocating the golf greens now situated on and adjacent to property proposed to be leased to the Public Health Service by West Virginia University is \$30,000. Although two greens are located on the proposed site for the facility and must be moved, a third green immediately adjoining the site also must be relocated to allow its continued use.

UNIVERSITY POSITION ON RELOCATION OF GOLF GREENS

Senator BYRD. Does the university maintain that, unless the golf greens are relocated, this second plot of ground cannot be made available? The lower portion of site 1-A?

Mr. BURGESS. They have not said this specifically, but they did point out in their purchase contract that the country club has a right to use this land through calendar year 1969. Their attorneys and those for the golf club have talked informally and the country club would be willing to let them take possession of this tract of land at an earlier date, provided the two golf greens were relocated so they could continue to use them through 1969.

Now the university's position is that they do not have the funds to pay for this relocation and asked us if we could do it.

ESTIMATED CONSTRUCTION COMPLETION DATE

Senator BYRD. Does the use of the golf course through 1969 cut into your scheduled completion date?

Mr. BURGESS. Yes, sir, it would. It is through calendar year 1969 the country club will have use of this. If our design is completed in May or August of 1968, then within perhaps 60 to 75 days construction crews would be moving onto the site and starting to excavate for the foundation.

Senator BYRD. How long would it require to finish the job?

Mr. BURGESS. Oh, through July 1970 is our present estimate.

SITE PROBLEM

Senator BYRD. Well, I don't want to belabor the point any further, Mr. Chairman.

I am very sorry that the site problem has not been resolved. I have had meetings with the Public Health Service people and with the university people and I have had them together in my office to see if we could not accelerate this, and I think that both parties have, indeed, attempted to move forward as expeditiously as they possibly could once we really got them together.

I am not so sure there could not have been a little more action on both sides prior to that time, but that is water over the dam. And we have to look ahead now.

I hope that the Public Health Service will do everything in its authority and power to move as expeditiously as possible. We have worked hard to secure the original \$20,000 the year before last and the \$330,000 last year and not a penny of this has been spent to this date; is that correct?

Mr. BURGESS. Right, sir.

Senator BYRD. And had the site location been resolved, as I understand it, you would have already had your design underway.

Mr. BURGESS. Right.

Senator BYRD. And you would have been in a position to justify the request for \$4.2 million for construction and we could have appropriated that money in this bill, and you would have moved your completion date ahead of what it now will be at least by 4 months and beyond that perhaps any length of time.

Mr. BURGESS. Right.

Senator BYRD. So it is being delayed a minimum of 4 months and a maximum of ad infinitum?

Mr. BURGESS. Yes, sir.

Senator BYRD. Because you don't have your site problem resolved yet and until you get it resolved, we cannot look forward to any scheduled completion date.

SCHEDULE PREDICATED ON SITE

Mr. BURGESS. The whole schedule is predicated on the site acquisition.

Senator BYRD. If you will supply that letter by Mr. Cohen so that the subcommittee will be fully informed as to the developments and as to the efforts being made by the Public Health Service to bring this problem to a resolution and also an estimate of the relocation of the golf greens, I think that is all I can request at this time, Mr. Chairman.

Thank you very much, sir.

Senator HILL. Senator Bartlett, any questions?

Senator BARTLETT. No questions.

Senator HILL. We want to thank you very much, sir, and thank all of you gentlemen very, very much. Thank you.

SCIENTIFIC ACTIVITIES OVERSEAS (SPECIAL FOREIGN CURRENCY PROGRAMS)

SCIENTIFIC ACTIVITIES OVERSEAS (SPECIAL FOREIGN CURRENCY PROGRAM)

STATEMENTS OF DR. CHARLES L. WILLIAMS, JR., DIRECTOR; MARIAN M. GILLIEN, EXECUTIVE OFFICER, OFFICE OF INTERNATIONAL HEALTH; DR. WILLIAM H. STEWART, SURGEON GENERAL; G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

SCIENTIFIC ACTIVITIES OVERSEAS (SPECIAL FOREIGN CURRENCY PROGRAMS)

For payments in foreign currencies which the Treasury Department determines to be excess to the normal requirements of the United States, for necessary expenses of the Public Health Service, as authorized by law, **[\$10,000,000]** **\$18,685,000**, to remain available until expended: *Provided*, That this appropriation shall be available, in addition to other appropriations to the Public Health Service, for payments in the foregoing currencies.

Amounts available for obligation

	1967	1968
Appropriation.....	\$10,000,000	\$18,685,000
Unobligated balance brought forward.....	76,252	-----
Total.....	10,076,252	18,685,000

Obligations by activity

	1967 estimate	1968 estimate	Increase or decrease
Foreign health research (total obligations).....	\$10,076,252	\$18,685,000	+\$8,608,748

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Public Health Service:			
Travel and transportation of persons.....	\$274,000	\$186,000	-\$88,000
Other services.....	8,748,752	17,399,000	+\$8,650,248
Total, Public Health Service.....	9,022,752	17,585,000	+\$8,562,248
Allocation to National Science Foundation:			
Other services.....	1,053,500	1,100,000	+46,500
Total, National Science Foundation.....	1,053,500	1,100,000	+46,500
Total obligations by object.....	10,076,252	18,685,000	+\$8,608,748

1640 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Summary of changes

1967 enacted appropriation-----	\$10,000,000
Unobligated balance brought forward-----	76,252
1967 total estimated obligations-----	10,076,252
1968 estimated obligations-----	18,685,000
Total change-----	+8,608,748

INCREASES

A. Program :

1. Bureau of Health Manpower-----	360,000
2. Bureau of Disease Prevention and Environmental Control-----	8,320,000
3. Bureau of Health Services-----	3,155,000
4. National Institutes of Health-----	4,135,000
5. National Institute of Mental Health-----	65,000
6. National Center for Health Statistics-----	1,300,000
7. National Library of Medicine-----	1,350,000

Total program increases-----+18,685,000

DECREASES

Nonrecurring program costs of prior year-----	—10,076,252
Total net changes requested-----	+8,608,748

Scientific activities overseas (special foreign currency program)

INTRODUCTION

Section 104(k) of the Agricultural Trade Development and Assistance Act of 1954, as amended, authorizes excess foreign currencies derived from the sale of U.S. surplus farm products abroad and from other sources to be used: "to collect, collate, translate, abstract, and disseminate scientific and technological information and to conduct research and support scientific activities overseas including programs and projects of scientific cooperation between the United States and other countries . . ."

Excess foreign currencies are those currencies owned by the U.S. which have been determined by the Department of the Treasury to be in more than sufficient supply to finance for the next two or three years regular U.S. overseas operations. The funds appropriated to the Public Health Service are used to purchase these excess foreign currencies from the Department of the Treasury and the dollars are credited to the account of the Commodity Credit Corporation thus reducing its need for direct appropriations.

The Public Health Service first received appropriations for this program in 1961. Only the National Institutes of Health developed projects that year. In 1968 every bureau of the Service and the National Library of Medicine and National Center for Health Statistics will be engaged in the Program.

A summary of estimated obligations by country follows:

	1967 estimate	1968 estimate
Brazil-----		\$280,000
Burma-----		30,000
Ceylon-----		30,000
India-----	\$2,500	
Israel-----	1,714,000	3,094,000
Pakistan-----	3,295,500	6,687,000
Poland-----	1,340,000	1,735,000
Tunisia-----	1,775,500	3,185,000
United Arab Republic (Egypt)-----		235,000
Yugoslavia-----	1,007,500	1,275,000
	941,252	2,134,000
Total-----	10,076,252	18,685,000

The following program narratives indicate the kinds of projects contemplated in the current and budget year. The highest priority projects will be supported to the extent possible within the total funds appropriated.

BUREAU OF HEALTH MANPOWER

INTRODUCTION

The Bureau of Health Manpower was established to provide a national source of information on health manpower needs now and for the future. The Bureau is a central point for planning and carrying out education and training programs designed to provide additional and better-qualified manpower for health.

Proposed projects

At present this Bureau, through the Division of Dental Health, supports ongoing dental research projects in Israel, India, and the United Arab Republic. In F. Y. 1968 the Division of Dental Health proposes to do fluoridation research in Poland, Egypt, and Yugoslavia. Since fluoridation continues to be an important dental public health measure in combatting dental decay, more knowledge is needed on the relationships between ingested fluorides and dental caries. Data obtained from these studies, difficult to obtain elsewhere, will supplement information being gathered in the United States. For example, because only a negligible number of Israeli school children drink fluoridated water from a central community water supply, the incidence of caries among them can be compared to that of United States children who drink fluoridated water.

Estimated obligations by country

	1967 estimate	1968 estimate
India	\$88,000	
Israel	43,000	
Poland	2,000	\$120,000
United Arab Republic (Egypt)	6,000	120,000
Yugoslavia	2,000	120,000
Total	141,000	360,000

BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL

INTRODUCTION

Research and development staffs of the constituent National Centers of the Bureau of Disease Prevention and Environmental Control have become increasingly aware of the desirability of initiating programs of study abroad. There is a great and urgent need for information on prevention of diseases and control of environment. Various foreign countries afford the opportunity for study of pathogenesis, epidemiology and prevention of diseases which occur in quantity and severity much greater than that found in the United States; consequently, relevant information is more quickly obtained. Exposure to certain pollutants of industrial origin can be studied more easily in certain foreign countries. Similarly, various types of accidents occur with greater frequency and severity in certain foreign countries, thereby offering unique opportunities for the study of their prevention and control. In addition, foreign scientific competence of high quality, in fields such as toxicology, industrial waste treatment, and occupational health is available for utilization in studies of mutual and world-wide interest.

The current Bureau program involves agreements with Ceylon, India, Israel, Pakistan, Poland, the United Arab Republic, and Yugoslavia. In terms of U.S. dollars, it is estimated that \$3,429,252 will be required in 1967 to support the current projects.

Proposed projects

The National Center for Chronic Disease Control proposes to conduct studies on cardiovascular and renal diseases, diabetes, neurological and sensory impairments, cancer, and mental retardation in India, Israel, Pakistan, Poland, the United Arab Republic, and Yugoslavia. In these countries, diets and social and

economic living patterns differ from those in the United States and afford opportunities for comparative study of the incidence of chronic diseases against different environmental patterns. Findings from these studies can be compared with studies being conducted in the United States. The relationship of various diets to cardiovascular disease, for example, may reveal important knowledge for the prevention and control of this leading disability. In mental retardation, for example, various pre-natal practices can be studied for their possible relationships to mental retardation and compared to the occurrence of mental retardation in the United States. Similar examples could be given for other chronic disease areas proposed by the Center for study.

The National Communicable Disease Center is planning to study communicable diseases including tuberculosis, rabies, leptospirosis, and trichinosis; streptococci, mycobacteria and staphylococci; and the production of biologic reagents. These studies will be carried out in Ceylon, India, Israel, Poland, the United Arab Republic and Yugoslavia. The primary reason for doing research on communicable diseases in these foreign countries is that the incidence of these diseases is much higher there than in the U.S. In the case of research in some areas, such as the use of fluorescent antibodies, and virus transmission by insects, the studies will continue and supplement similar projects begun several years ago in outstanding research centers, both U.S. and foreign.

The National Center for Urban and Industrial Health proposes research on various subjects in Israel and Yugoslavia. Israel's ethnically heterogeneous population, high pedestrian accident rate, and relatively liberal regulations on the use of drugs afford valuable opportunities to study the relationships between osteoporosis and fractures, standards for licensing drivers with heart disease, pedestrian behavior associated with traffic accidents, and the relationship of drug use to driving behavior and traffic accidents. Because of Israel's subtropical climate, various studies relating the effects of heat and solar radiation to occupational health will also be conducted. The extensive coal and uranium mining industries in Yugoslavia provide ample data for studying the effects (biochemical, morbidity, and mortality) of work environment on the occupational health of workers.

The National Center for Air Pollution Control will support projects in Israel and Poland. In Israel the translation of foreign journals in the field of environmental health will be performed. Researchers in Poland will investigate respiratory tract diseases of cotton textile workers living in areas of various degrees of air pollution.

The National Center for Radiological Health proposes to do research concerning the effects of radiation on humans in certain regions where unusually high levels of radiation have been found. An evaluation study is being planned using standard radiation measurement techniques, in one such area in Southwest India where a highly elevated natural background radiation exists.

Estimated obligations by country

	1967 estimate	1968 estimate
Ceylon.....	\$2,500	
India.....	386,500	\$1,509,000
Israel.....	1,965,000	4,787,000
Pakistan.....	264,000	50,000
Poland.....	235,000	880,000
United Arab Republic (Egypt).....	354,500	605,000
Yugoslavia.....	221,752	489,000
Total.....	3,429,252	8,320,000

BUREAU OF HEALTH SERVICES

INTRODUCTION

The International Research Program of the Bureau of Health Services proposes specific projects selected only if they have the following characteristics: (1) that the Bureau of Health Services has professional research competence and experience in the field of investigation; (2) that the specific project is likely to provide knowledge that can be a basis for improved conduct of the Bureau's therapeutic and rehabilitative responsibilities; and (3) that the project promises a significant

contribution toward solving health or clinical problems in the geographic location where it is being conducted.

The Division of Hospitals has an ongoing five-year project in India concerning the role of arthropods in the transmission of leprosy and a three-year project in Pakistan supporting an investigation into the prevalence and etiology of severe and moderately severe anemia.

The Division of Mental Retardation proposes to study various pre-natal practices for their possible relationships to mental retardation and compared to the occurrence of mental retardation in the United States.

The Division of Medical Care Administration is interested in learning about systems of medical care in other countries that have had different experiences in this area than has the United States in order to better plan and conduct its own medical care administration activities. Projects will be conducted in Israel, Pakistan, and Yugoslavia.

Similarly, the Division of Community Health Services wishes to know more about leadership and communications in the health professions and cultural adaptations to health problems and services in India, Poland, and Yugoslavia.

Proposed projects

CLINICAL RESEARCH PROJECTS

India

Malnutrition and anemia in relation to cataract formation.

Rehabilitation of leprosy patients.

Cancer chemotherapy.

Study of the effectiveness of cholera vaccine.

Study of sickle-cell and non-sickle-cell population.

Yugoslavia

Research into the hyperbaric treatment of tuberculous spondylitis of the dorsal spine.

Israel, Poland

Development of techniques for rapid screening evidence of disease.

India, Poland, Israel, Brazil

Psychological and psychiatric testing of different sociological background.

Burma, Ceylon, Tunisia, Egypt

Evaluation of public health methods with respect to, for example, complications of pregnancy, prenatal mortality and prematurity, family planning, mental health programs, health education activities.

India, Pakistan, Israel, Tunisia, Ceylon

Clinical training program.

HEALTH SERVICES RESEARCH PROJECTS

India, Pakistan, Tunisia, Egypt, Ceylon, Burma

Preventive health services, rehabilitative services, ambulatory care, training of new categories of health aides, new health delivery systems.

Israel, Poland, Brazil, Yugoslavia

Hospital administration, community medicine, construction of facilities.

Israel, India, Yugoslavia

Compilations of health research studies conducted in other countries.

India, Poland, Yugoslavia

Leadership and communication in the health professions.

Medical care utilization.

Cultural adaptations to health problems and services.

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Estimated obligations by country

	1967 estimate	1968 estimate
Brazil.....		\$180,000
Burma.....		30,000
Ceylon.....		30,000
India.....		385,000
Israel.....	\$39,000	350,000
Pakistan.....	163,500	185,000
Poland.....	63,000	810,000
Tanzania.....		135,000
United Arab Republic (Egypt).....		75,000
Yugoslavia.....	218,500	975,000
Total.....	484,000	3,155,000

NATIONAL INSTITUTES OF HEALTH

INTRODUCTION

The general objective of the NIH Special Foreign Currency Program is the support of scientific activities which are within the program interests and responsibilities of the National Institutes of Health and of mutual interest to the host country, its institutions and investigators. NIH believes that the support of selected foreign research and the development of biomedical research potential overseas with these funds will contribute to the biomedical sciences in the United States and the solution of public health problems of concern to the U.S. as well as the host country. Projects supported are directed principally toward the utilization of unique research opportunities which may be represented by a population with a high incidence of some clinical manifestation of medical interest; environmental, biological, and medical factors limited to certain geographical areas; specialized laboratory facilities; or the outstanding competence of scientific personnel within the host country.

Since the NIH started its program, 90 agreements in the fields of infectious diseases, tropical medicine, neurophysiology, cardiovascular diseases, developmental biology with implications for the programs of the childhood diseases and dental problems, epidemiology, behavioral sciences, and other fields directly related to Institute program interests have been initiated, negotiated and signed.

NIH agreements by institute

	Number
National Institute of Allergy and Infectious Diseases.....	19
National Institute of Arthritis and Metabolic Diseases.....	14
National Cancer Institute.....	12
National Institute of Child Health and Human Development.....	2
National Institute of Dental Research.....	11
National Heart Institute.....	8
National Institute of Mental Health.....	4
National Institute of Neurological Diseases and Blindness.....	19
Division of Biologics Standards.....	1
Total	90

Late in 1963, the NIH decided to extend the research opportunities available under this Program to researchers at U.S. academic institutions. The following table illustrates the experience of this decision.

Distribution of NIH agreements by program

Fiscal year	Intramural number ¹	Extramural number ²	Total number
1962	17		17
1963	12	1	13
1964	12	6	18
1965	10	9	19
1966	10	13	23
Total	61	29	90

¹ NIH scientists serving as project officers.² University scientists serving as project officers.

During 1966, the National Institutes of Health obligated the equivalent of \$2,025,352 for research in the following countries:

India (\$1,248,011) with the—

(1) Johns Hopkins Center for Medical Research and Training in Calcutta to *Investigate Respiratory and Enterovirus Infections in Children*;

(2) Tata Institute of Fundamental Research, Bombay to conduct *Investigations of Oral Cancer and Associated Oral Conditions in Indian Rural Populations*;

(3) Andhra Medical College, Visakhapatnam to investigate the *Protective Effect of ATP in Hemorrhagic Shock*;

(4) Christian Medical College Hospital, Vellore to conduct *Collaborative Neurologic Studies: Portland-Vellore*;

(5) Indian Institute of Science for *Metabolic Studies of Vitamin A*;

(6) Indian Council of Medical Research for *Investigations of Insect-Transmitted Viruses (arboviruses) in India*;

(7) All India Institute of Hygiene and Public Health for *Clinical and Pathophysiological Studies of Cholera*; and

(8) All India Institute of Hygiene and Public Health to *Investigate Methods Adaptable to Epidemiologic Studies of Leprosy*.

Israel (\$608,801) with the—

(1) Weizmann Institute of Science, Rehovoth, for the *Study of the Pharmacological Properties of Synthetic Oligo- and Macromolecules*;

(2) Weizmann Institute of Science, Rehovoth, for *Investigation of the Regulation of Protein Synthesis: Initiation and Phasing Mechanism for Translation of the Genetic Message*;

(3) Weizmann Institute of Science, Rehovoth, for *Determination of the Forces Which Control the Structure of Proteins and Polypeptides at Interfaces*;

(4) Weizmann Institute of Science, Rehovoth, for the *Study of Synthetic Polypeptide Antigens*;

(5) Tel-Aviv Municipal Hospital, Tel Aviv for *Investigations of The Effects of Amyloid on the Gastrointestinal Tract*;

(6) Hebrew University, Hadassah Medical School, Jerusalem for *Studies on the Biology and Immunology of Trachoma Agents*;

(7) Hebrew University, Hadassah Medical School, Jerusalem for *studies of the Metabolism of Extraocular Muscles in Experimental Animals*;

(8) Hadassah School of Dental Medicine for the study of *Factors Influencing Resorption and All Growth in Collagen Implants Formed by Thermal Gelatin in vivo*.

Pakistan (\$78,756) with the—(1) Pakistan Medical Research Center, Lahore, West Pakistan for studies of *Mycobacterial Diseases in Pakistan*.

Poland (\$95,938) with the—(1) Nencki Institute of Experimental Biology, Warsaw for studies of *Properties of Actin and Other Muscle Proteins*.

Interest in this Program and its opportunities for research is increasing steadily, and the NIH is receiving large numbers of applications for review. Likewise, PHS Study Sections are receiving essentially their first experience with review of such applications which in the past have been primarily intramural projects submitted through other NIH channels. This has generated much interest in the program on the part of the Study Sections, where the program has been well received. An interesting and fruitful development is the number of inquiries received from U.S. investigators seeking a means of maintaining a research association with young men they have trained who have returned to

their homelands and are struggling to implant the concept of clinical investigation within the established hierarchy of indigenous academic systems. This is an extremely promising aspect of this program in terms of future contributions to biomedical research from these countries.

During 1967 and 1968, the National Institutes of Health will continue its support of research of mutual interest. Types of projects proposed, by country, are listed below:

India

- Study of Portal Hypertension and Liver Disease.
- Study of Structure and Functions of Primates-RNA.
- Investigations of Neurotoxins from Plant Materials.
- Studies of Epidemiology of Filariasis in India.

Israel

Study of Plant Sterol Control of Serum Cholesterol *In Vitro* Studies on the Immune System.

Investigations of Antigenic Relationship Between Placenta and Kidney.

Pakistan

Studies on Hookworm in Pakistan.

In addition to the above new types of projects, the National Institutes of Health proposes to continue its support of certain ongoing projects such as listed below:

Pakistan

To develop, improve and demonstrate measures for the Prevention and Eventual Eradication of Cholera.

Israel

Epidemiologic Studies of Multiple Sclerosis in Israel.

Estimated obligations by country

	1967 estimate	1968 estimate
India.....	\$1,114,000	\$1,000,000
Israel.....	816,500	935,000
Pakistan.....	1,008,500	1,300,000
Poland.....	646,000	500,000
United Arab Republic (Egypt).....	527,500	300,000
Yugoslavia.....	189,000	100,000
Total.....	4,301,500	4,135,000

NATIONAL INSTITUTE OF MENTAL HEALTH

INTRODUCTION

The general objective of the use of P.L. 480 funds by the NIMH is to increase the range of opportunities to do research relating to the etiology and epidemiology of mental disorders, the care, treatment and rehabilitation of the mentally ill, prevention of mental disorders and the promotion of mental health. Since the etiology of most mental disorders is complex involving biological, psychological, and socio-cultural factors and since the treatment and management of mental disorders is highly variable, crosscultural studies and studies of a variety of population groups are particularly important in this field. Countries in which P.L. 480 funds are available provide a particularly high potential for such studies. Some of these funds will also be used to promote international exchange of ideas and research results through working seminars.

Types of projects proposed, by country, are as follows:

Israel

Assessment of Ambivalence for Evaluating Significance of Opposed Attitudes in Psychoanalysis and Personality Theory.

International Research Seminar on Community Mental Health Programs.

Longitudinal Study of Relationships between:

- a. Type of Family Structure;
- b. Variety of Family Communication Patterns; and

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c. Physiological and Psychiatric Characteristics of Individual Family Members.

Poland

Learning and Lesions in Specific and Nonspecific Neurological Pathways of the Brain Stem.

Organization of the Brain, Extension.

Estimated obligation by country

	1967 estimate	1968 estimate
Israel.....	\$66,000	\$65,000
Poland.....	338,000	-----
Total.....	404,000	65,000

NATIONAL CENTER FOR HEALTH STATISTICS

INTRODUCTION

The National Center for Health Statistics conducts a special program designed to encourage and promote international research activities in the areas of vital and health statistics. All projects of the program are scientific research studies primarily designed to develop new and improved methods for the scientific study of human populations, their growth, and their health. This focus on scientific methodology ensures that the projects make a contribution to scientific knowledge generally applicable to the United States, the country where the projects are conducted, and to other countries with related methodological problems. Accordingly, these activities enhance the scientific knowledge of the United States, provide an opportunity for the exchange of scientific information and techniques on an international level, and supply a source of comparative statistics which enables the Center to better evaluate its statistical data and identify areas that may require further attention and research.

Two important trends in the development of the program are now being stressed. One is the development of projects in which parts are carried on in more than one country so that comparable results from several countries are available. For example, projects are now under way in India and Egypt on the analysis of the physical measurements of school age children. These data will be comparable with information collected in the U.S. National Health Survey. Together, the three-country comparison of data will give significant basic information on child growth and development.

Another example is a detailed feasibility study of methods for measuring the utilization of medical care. This has been a very successfully coordinated project with comparable aspects carried on in the United States, England and Yugoslavia. Only the Yugoslavia portion of this three-country project is financed from this appropriation.

Interrelated projects are being conducted in Pakistan, India and Egypt in the microsimulation of dynamic populations and the testing of survey-registration methods for collecting data relating to death and birth rates. Phases of these projects relate to similar methodological studies being conducted as part of the research program of the National Center for Health Statistics in the United States.

The other major trend in the development of this program is the involvement of research talent from the faculties of various United States universities. The ability to coincide with the work programs of these universities permits the utilization of more American directed research talent than is available from the Center's regular staff and also assures that the projects are closely related to U.S. research interests. Faculty members from several of the major United States universities have undertaken responsible roles as consultants or project officers. In 1967 and beyond, further advantage will be taken of this trend.

In 1968, the program will include two additional countries, Tunisia, and Israel. The areas of study in the more developed countries (Israel, Poland, and Yugoslavia) will concentrate on methodological research with emphasis on cross-national comparability, particularly with the United States. In the developing countries of Pakistan, India, Tunisia, and Egypt, emphasis will be

given on methodological and simulation studies on various aspects of the population dynamics problems. More specifically, the studies projected for the several countries are reflected below. In each instance, the studies will continue over periods from three to four years and will be funded in their entirety from the 1968 request.

Egypt

Continuing development of microsimulation models on population dynamics. Utilizing sampling surveys to measure the completeness of birth and death registration, as well as the attitudes toward and the impact of health measures on family size and population growth. For these studies, \$175,000 are requested in 1968.

India

Population dynamics through computer simulation methods and testing models against actual situations. Develop a "population laboratory" for testing methods of applying health programs, the efficacy of health programs, etc. For these studies, \$200,000 are requested in 1968.

Israel

Statistical survey methodology for improving survey estimates through replication processes in multivariate analysis of multistage samples. Assess health differentials in migrants as compared to the stable population. For these studies, \$150,000 are requested in 1968.

Pakistan

Establish a national birth and death registration system to provide continuing and improved measurement of population change, as well as to furnish indices of health conditions. Develop methods for the appraisal of medical care distribution in the general population from established medical care facilities. For these studies, \$200,000 are requested in 1968.

Poland

Expand a chronic respiratory disease study, as related to atmospheric factors, initiated on a pretest basis during 1965-1967. Develop methodology for evaluating the outcome of medical care in serious hospital episodes and post-hospitalization rehabilitation services. For these studies, \$225,000 are requested in 1968.

Tunisia

Several studies on population dynamics to obtain independent validations of the findings in other developing countries with respect to methodology and the values of population parameters. For these studies, \$100,000 are requested in 1968.

Yugoslavia

Develop and test methodology in establishing comprehensive data on all types of medical care received in a large population for comparison with large-scale medical care service operations in the United States and other systems. For these studies, \$250,000 are requested in 1968.

Estimated obligations by country

	1967 estimate	1968 estimate
India.....	\$70, 500	\$200, 000
Israel.....		150, 000
Pakistan.....	4, 500	200, 000
Poland.....	100, 000	225, 000
Tunisia.....		100, 000
United Arab Republic (Egypt).....	119, 500	175, 000
Yugoslavia.....	110, 000	250, 000
Total	404, 500	1, 300, 000

NATIONAL LIBRARY OF MEDICINE

INTRODUCTION

The National Library of Medicine conducts a special international research program utilizing foreign currencies to improve biomedical communications. This

program serves the U.S. scientific biomedical and health community by making foreign literature more readily and easily available in the form of translations, abstracts, directories, scholarly critical reviews, indexes of biomedical literature, and histories of medicine. Supervision of the scientific and technical content of these activities is the responsibility of the National Library of Medicine. The National Science Foundation, under an agreement with the National Library of Medicine, is responsible for financial negotiations and agreements with foreign contractors in Israel, Poland, and Yugoslavia. The Library maintains programing responsibility and also will make, where appropriate, direct research grants to medical institutions and universities when this mechanism can accomplish program objectives more effectively.

The special foreign currency program will continue to improve biomedical communications through a variety of activities. These will involve the development of new modes of communications, selective dissemination of information, and the continuation of abstracting, indexing, translating activities and preparation and publication of critical reviews and reports on the status of research. These activities will provide more extensive interdisciplinary coverage. There will be increased cooperation with professional societies to identify the most significant foreign literature, new communication techniques, and the needs of users. New experimental projects will be undertaken toward these goals. These projects will not duplicate existing information services but will reinforce and increase their effectiveness in information dissemination.

During 1967 and 1968 the following types of projects, by country, are proposed by the National Library of Medicine.

Brazil

In 1968, program funds will support critical reviews in such areas as tropical medicine, biophysics, immunology, and hematology. The program also will include support for translations of selected biomedical literature.

Poland

In 1967 and 1968, ten Polish biomedical journals will be translated and published in English for special distribution to medical libraries in the U.S. The Library will support a specialized abstracting program in oral research. Abstracts are prepared from the foreign literature for publication in the Oral Abstracts Journal of the American Dental Association. This activity involves the cooperative efforts of the American Dental Association and the Polish Dental Association and supplements the program in oral research abstracting underway in Israel.

The Library supports a program of critical reviews prepared in Poland and designed to identify trends and to stimulate future research. Critical reviews are prepared by leading scientists, sometimes in collaboration with United States colleagues for joint authorship. Reviews are encouraged in areas such as neurophysiology, antibiotics, and congenital anomalies. This special activity is another way of improving scientist-to-scientist communication and knowledge of the state of research in special subject matter fields.

In 1968, the Library will support an experiment in obtaining abstracts of Polish biomedical journals without undertaking full translation. These abstracts will be distributed to United States abstracting services for one year to determine their usefulness.

Israel

Activities in Israel include specialized abstracting of the drug literature; specialized abstracting of oral research literature; translations of selected journals, monographs, and articles; preparation of histories of medicine; and translations of ancient scholarly medical texts and manuscripts. In 1967 and 1968, special foreign currency program funds will be used to support indexing foreign biomedical literature and critical reviews in Israel.

Yugoslavia

Program funds in Yugoslavia support the translation and publication of English versions of three Yugoslav biomedical journals and a comprehensive journal containing selections from many Yugoslav journals.

In 1967 and 1968, funds in Yugoslavia will support the preparation of critical reviews.

India

The program in Indian will continue with the surveying, cataloging, and microfilming of rare manuscripts. Microfilm copies are deposited in appropriate

Indian institutions and in the National Library of Medicine for use by United States scholars. Translation of scholarly historical texts relating the Unani and Ayurvedic will continue in 1967.

Estimated obligations by country

	1967 estimate	1968 estimate
Brazil		\$100,000
India	\$16,000	
Israel	241,500	400,000
Poland	454,500	650,000
Yugoslavia	200,000	200,000
Total	912,000	1,350,000

OFFICE RESPONSIBILITIES

Senator HILL. Now, Dr. Charles L. Williams, Jr., Office of International Health.

All, right, Doctor, we will be happy to have you proceed now, sir. Dr. WILLIAMS. Thank you, Mr. Chairman.

I am Charles L. Williams, Jr., Director of the Office of International Health.

The Office of International Health, a staff office of the Surgeon General, is responsible for: (1) development of Service policies concerning the relationship with bilateral and multilateral health agencies; (2) participation with the State Department in formulating U.S. positions related to WHO, PAHO, and other international health matters; (3) guidance to the five bureaus of the Public Health Service in their international health programs; and (4) for coordinating the special foreign currency program of the Service.

UTILIZATION OF LOCAL CURRENCIES DERIVED FROM SALES OF U.S.
AGRICULTURE PRODUCTS

Funds were first appropriated to the Public Health Service in 1961 for the special foreign currency program, which permits local currencies derived from sales of U.S. agricultural commodities to be used to support scientific projects which not only assist the Public Health Service in achieving its mission, but also benefit the foreign countries involved. A total of 172 projects were currently in effect on January 31, 1967, representing a net increase of 29 projects over June 30, 1966.

INVESTIGATION IN GEOGRAPHIC PATHOLOGY AND EPIDEMIOLOGY

A variety of unusual or unique opportunities exist in excess currency countries to carry out studies of substantive importance to medical science and to the health of the United States. For example, investigations in geographic pathology and epidemiology on an international basis are likely to continue to provide important clues to the causes of certain diseases which cannot be studied adequately in more restricted environments.

INTERNATIONAL CONFERENCES

The service has utilized surplus currency funds to support important international conferences, such as the Third World Conference on Medical Education held in New Delhi in November 1966. We are planning some assistance to the Fifth International Epidemiological Conference in Poland or Yugoslavia and a seminar on the evaluation of community mental health programs will be held in Israel during 1968. This utilization of excess currency funds helps to refine the present status of knowledge and understanding of existing problems and to help point the direction for further studies and research.

We are pleased to report that negotiations are near culmination on a contract between the Public Health Service and the Association of American Medical Colleges and between the AAMC and the Indian Association for the Advancement of Medical Education under which selected U.S. medical students and faculty members would be enabled to study and observe exotic disease entities in India that are rarely seen in the United States. We are anxious to extend this type of study and observational opportunity to other countries at an early date.

NATIONAL LIBRARY OF MEDICINE SUPPORT

The National Library of Medicine supports scientific translation and abstracting projects in Israel, Poland, and Yugoslavia. This involves journal and monograph translations and the scanning of approximately 125 worldwide journals for relevant material on drugs and other areas of special importance. In addition, the library supports the preparation and publication of critical reviews on health subjects of U.S. and international interest.

1967 PROJECT AGREEMENT

Among the new agreements negotiated during 1967 are projects in India, Israel, and the United Arab Republic for the improvement of diagnostic and therapeutic techniques in mental retardation, evaluation of different methods of controlling rheumatic fever, improved techniques in kidney dialysis and methods of early detection of cerebral palsy.

KIDNEY DIALYSIS TECHNIQUES STUDY

Senator HILL. Are you making any progress in the techniques of kidney dialysis?

Dr. WILLIAMS. Mr. Chairman, I can give you a brief description of this project, if you would like, sir.

Senator HILL. All right.

Dr. WILLIAMS. This project, Mr. Chairman, is being carried out in Israel. The study is investigating the physiological and psychological changes which take place in patients undergoing prolonged dialysis. The investigator has originated a method to estimate water and electrolyte content of red cells and is using this method to study the return to normality during dialysis. The psychiatrist on the project is studying the effects of anuria, or complete cessation of urination, and impotence on the patients.

The project has not been underway long enough to produce results. However, it is expected that the study will clarify some aspects of dialysis which may result in improvements and changes in the dialysis process.

Senator HILL. And reduce the cost some.

Dr. WILLIAMS. We hope so.

Senator HILL. The cost is pretty heavy today.

Dr. WILLIAMS. Costs are very, very high.

Senator HILL. Awfully high.

Dr. WILLIAMS. Yes.

In the last 2 years this program has grown at a rapidly increasing rate. The period of planning and exploration of resources has led the way to vigorous action as the various units of the Service have become familiar with the resources available in excess currency countries.

1967 APPROPRIATION AND 1968 BUDGET REQUEST

The \$10 million appropriated for 1967 has been fully committed. Additional projects totaling more than \$15 million are now ready and will be supported to the extent of available funds. We are requesting an appropriation of \$18,685,000 for 1968.

I shall be glad to answer any questions the committee may have.

Senator HILL. Neither the Department nor the Budget Bureau cut your request any, did they?

Dr. WILLIAMS. No, sir.

Senator HILL. They left you the full amount?

Dr. WILLIAMS. Yes, sir.

ACTIVITY RESULTS AND COST

Senator HILL. Do you think you have gotten some pretty good results with these funds to date?

Dr. WILLIAMS. We think we have gotten some excellent results.

Senator HILL. Results that might not have been possible here in this country or if possible, would have cost you more in some foreign country; is that right?

Dr. WILLIAMS. Yes, sir; both are true, Mr. Chairman.

The cost of research projects when carried out through use of these funds, we believe, is somewhat less than carrying them out in the United States and there are always situations and facilities that exist in some of these countries that do not exist in the United States, making possible the study of certain diseases and situations that we cannot study here.

Senator HILL. That you could not carry on here?

Dr. WILLIAMS. That is correct.

Senator HILL. Senator Bartlett?

ACTIVITY FINANCING

Senator BARTLETT. What is the budget figure for next year?

Dr. WILLIAMS. \$18.6 million and some, Senator.

Senator BARTLETT. This comes from foreign currency?

Dr. WILLIAMS. Yes, as you know, the funds are appropriated in dollars, and we exchange the dollars for foreign currencies.

Senator BARTLETT. How does this affect the work done in Israel?

Dr. WILLIAMS. A great many of the projects to be carried out will be done in Israel, Senator, and to the extent it is possible we are systematically substituting Public Law 480 funds for dollar funds in order to cut down on the balance-of-payments problem.

Senator BARTLETT. Public Law 480 funds are used in Israel?

Dr. WILLIAMS. Yes, sir.

EXOTIC DISEASES IN INDIA

Senator BARTLETT. What are some of these exotic disease entities in India to which you refer?

Dr. WILLIAMS. Smallpox, for example, certain other parasitic diseases that are quite uncommon in the United States, such as schistosomiasis, filariasis and other diseases of this sort.

KIDNEY DIALYSIS INVESTIGATION IN ISRAEL

Senator BARTLETT. What can you learn concerning kidney dialysis in Israel that can't be learned here?

Dr. WILLIAMS. Mr. Chairman, that is a very difficult question to answer, and I think I would have to say that I am uncertain that we can learn anything in Israel that we cannot learn here except that we can perhaps learn it more cheaply, more economically in Israel. Also, Israel is well supplied with very competent scientific investigators and there are some men working in Israel whose background and experience qualify them very highly to do this kind of work.

This is a very serious problem, as I am sure you know, Senator, and we feel that we need to avail ourselves of all of the scientific resources that exist wherever they exist.

Senator BARTLETT. Who heads up that program, that particular program, U.S. doctors, or those—

Dr. WILLIAMS. This particular project, I believe, sir, is headed by an Israel physician at the Hebrew University, Dr. Czaczkes. I am not sure of the pronunciation, but that is his name, sir.

U.S. MEDICAL SCIENCE ADVANCEMENT

Senator BARTLETT. I assume part of this program is intended to enlarge our own store of knowledge and part of it is to transmit to other countries our knowledge concerning diseases?

Dr. WILLIAMS. Under the authority of this particular portion of Public Law 480, Mr. Chairman, the purpose is essentially to advance U.S. medical science. It does, of course, advance medical science in the countries with whom we are collaborating, but this is, in effect, a spinoff.

The law and the Presidential delegation authorize us to carry out work which is essentially benefiting U.S. medical science.

PROJECTS IN POLAND AND YUGOSLAVIA

Senator BARTLETT. Why is it, then, considering what you have just said, that Poland and Yugoslavia have been especially selected?

Dr. WILLIAMS. Mostly, Senator, because these two countries have available excess currencies and they also have reasonably well-qualified

scientific communities, so there is competence available in the countries to do the work and we have local funds available to work with.

Senator BARTLETT. Is the medical art in each country at a fairly high state?

Dr. WILLIAMS. Yes, sir.

Senator BARTLETT. They have good medical schools?

Dr. WILLIAMS. Fairly good medical schools; yes, sir. We don't believe they compare with the U.S. medical schools, but they are, on the average, better than in many of the so-called world's under-developed countries.

Senator BARTLETT. Thank you, I have no further questions.

Senator HILL. I want to thank you very much, sir.

RETIRED PAY OF COMMISSIONED OFFICERS

STATEMENTS OF LEO J. GEHRIG, DEPUTY SURGEON GENERAL; ACCOMPANIED BY JOHN J. WALSH, DIRECTOR; WILLIAM H. STEWART, SURGEON GENERAL; G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

RETIRED PAY OF COMMISSIONED OFFICERS

For retired pay of commissioned officers, as authorized by law, and for payments under the Retired Serviceman's Family Protection Plan and payments for medical care of dependents and retired personnel under the Dependents' Medical Care Act (10 U.S.C., ch. 55), such amount as may be required during the current fiscal year.

Amounts available for obligation

	1967	1968
Appropriation (Indefinite).....	\$10,743,000	\$13,391,000

Obligations by activity

	1967 estimate	1968 estimate	Increase or decrease
Retirement payments.....	\$5,077,000	\$5,779,000	+\$702,000
Survivors' benefits.....	106,000	119,000	+13,000
Dependents' medical care.....	5,560,000	7,493,000	+1,933,000
Total obligations.....	10,743,000	13,391,000	+2,648,000

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Benefits for former personnel.....	\$5,183,000	\$5,898,000	+\$715,000
Other services.....	4,122,000	5,997,000	+1,875,000
Services of other agencies.....	1,438,000	1,496,000	+58,000
Total obligations by object.....	10,743,000	13,391,000	+2,648,000

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Summary of changes

1967 enacted appropriation (indefinite)-----	\$10, 743, 000
1968 estimated obligations (indefinite)-----	13, 391, 000
Total change-----	+2, 648, 000

INCREASES

A. Built in:

1. Projection of estimated retirements during 1967 to full year-----	162, 000
2. Estimated additional retirements during 1968-----	540, 000
3. Estimated increase in survivors' benefits-----	13, 000
4. Increased patient load in both Federal and non-Federal hospitals and higher average daily rate for contract hospitalization of dependents-----	200, 000
5. To carry on a full-year basis in 1968 the cost of liberalized benefits for dependents' medical care authorized by Public Law 89-614-----	1, 733, 000
Total built-in items-----	2, 648, 000
Total change requested-----	2, 648, 000

EXPLANATION OF CHANGES

An estimated increase of \$702,000 is to provide for the full year of 1968 the payments to officers placed on the retired roll during 1967 and for the net increase of 65 officers estimated to be added to the retired list during 1968.

An increase of \$200,000 is estimated to provide for increased patient load in both Federal and non-Federal hospitals and for higher average daily rates for contract hospitalization of dependents.

An increase of \$1,733,000 is estimated to carry on a full year basis the cost resulting from the passage of the Military Medical Benefits Amendments of 1966 (P.L. 89-614) approved September 30, 1966.

Retirement payments

1967 estimate-----	\$5, 077, 000
1968 estimate-----	5, 779, 000
Increase or decrease-----	+702, 000

This estimate provides for mandatory payments to officers who have been retired for age, disability, or specified periods of service in accordance with provisions of law. Fifteen officers will be eligible for age retirement during 1968 and provision is made for the retirement of 10 officers for disability and 50 officers for years of service.

On June 30, 1966, there were 618 officers on the retired list. During 1967, through December 31, 1966, four officers have been retired for disability, 53 officers for service, and 10 for age. Four additional officers will become eligible for age retirement. It is estimated that a total of 74 officers will be retired during the fiscal year and that 10 will be dropped from the roll, resulting in an estimated 682 officers on the retired list as of June 30, 1967.

It is estimated that 50 officers will be retired for service and 10 for disability during 1968. Since 15 officers will reach the mandatory retirement age of 64 years, provision has been made for the retirement of a total of 75 officers during 1968. It is estimated that 10 officers will be dropped from the roll during the year, resulting in an estimated total of 747 officers on the retired list as of June 30, 1968.

Table of increases and decreases of retirements

	Fiscal year 1962	Fiscal year 1963	Fiscal year 1964	Fiscal year 1965	Fiscal year 1966	Esti- mate, fiscal year 1967	Esti- mate, fiscal year 1968
Retired for:							
Disability.....	16	11	12	10	10	5	10
Age.....	6	10	12	12	19	14	15
Years of service.....	40	25	47	54	66	55	50
Total retirements.....	62	46	71	76	95	74	75
Dropped:							
Death.....	20	16	12	15	12	10	10
Other.....	0	2	0	0	1	0	0
Total, dropped.....	20	18	12	15	13	10	10
Net increase or decrease in officers on retired roll, end of fiscal year.....	42	28	59	61	82	64	65
Officers on retired roll, end of fiscal year.....	388	416	475	536	618	682	747

Survivors' benefits

1967 estimate.....	\$106,000
1968 estimate.....	119,000
Increase or decrease.....	+13,000

This estimate provides for the payment of annuities to the survivors of deceased retired officers who elected to receive reduced retirement payments under the Retired Servicemen's Family Protection Plan.

The estimate is based on payments to the survivors of the following numbers of officers:

June 30, 1966.....	48
June 30, 1967 (estimated).....	54
June 30, 1968 (estimated).....	60

Dependents' medical care

1967 estimate.....	\$5,560,000
1968 estimate.....	7,493,000
Increase or decrease.....	+1,933,000

The Dependents' Medical Care Act (10 U.S.C., Chapter 55) provides for an improved and uniform program of medical care for active duty and retired members of the uniformed services and their dependents. This activity covers the cost of medical care to be furnished in facilities outside the Public Health Service, both non-Federal and uniformed service facilities, to dependents of eligible personnel of the Coast Guard, the Coast and Geodetic¹ Survey, and the Public Health Service; and to retired personnel of these services.

A comparison of the estimated workloads and costs is shown in the following table:

¹ Coast and Geodetic Survey now included in Environmental Science Services Administration.

	1967 estimate	1968 estimate
I. Contract hospitalization of dependents:		
1. Average daily patient load of hospitalization	86	90
2. Total, annual patient-days	31,390	32,940
3. Average cost per day	\$75.60	\$76.35
4. Total, contract hospitalization rounded	\$2,373,000	\$2,515,000
II. Federal hospitalization:		
Dependents:		
1. Average daily patient load of hospitalization	70	72
2. Total, annual patient-days	25,550	26,352
3. Approved reimbursable rate	\$46.25	\$46.25
4. Total, dependents	\$1,181,688	\$1,218,750
Rounded	\$1,182,000	\$1,219,000
Retired personnel:		
5. Average daily patient load of hospitalization	26	28
6. Total annual patient-days	9,490	10,248
7. Approved reimbursable rate	\$27	\$27
8. Total, retired personnel	\$256,230	\$276,696
Rounded	\$256,000	\$277,000
9. Total, Federal hospitalization	\$1,438,000	\$1,496,000
III. Cost of liberalized dependents medical care benefits under Public Law 89-614	\$1,749,000	\$3,482,000
IV. Total, costs of dependents' medical care	\$5,560,000	\$7,493,000

The expenses incurred for this activity are mandatory obligations of the Public Health Service. They arise because a dependent or a retired person utilizes an approved hospital facility. The amount of expense incurred varies, depending upon the hospital system which the Public Health Service beneficiary enters: (1) if care is rendered by a Public Health Service facility there is no charge under the Dependents' Medical Care Act (these costs are chargeable to "Hospitals and medical care"); (2) if care is received from a facility of another uniformed service, the Public Health Service is billed directly by that organization; and (3) if medical care is given by a private facility, a contractor such as Blue Cross pays the hospital and bills the executive agent in the Department of Defense, who in turn bills the Public Health Service for the services rendered. Since units costs are variable to an extensive degree and the workload is not created through program operations of the Public Health Service, the costs of the Dependents' Medical Care program are neither precisely predictable nor subject to administrative controls.

P.L. 89-614, approved September 30, 1966, liberalizes the medical provisions of the Dependents' Medical Care Act to provide benefits to retired personnel and dependents that will be more in line with those provided under the Federal Employee Health Benefits Act and the new Social Security health program for the aged. The major new benefits provide outpatient care and improved inpatient care to dependents. They provide a program of care in civilian hospitals for retired personnel and their dependents. They provide aid to military parents who have physically or mentally handicapped children who need special care. The provisions of this law became effective January 1, 1967, except for those provisions related to patient care for active duty dependents. This part of the amendment became effective October 1, 1966.

The new legislation is part of the Department of Defense program for providing such services. In connection with the development of the proposal, a set of costs estimates were prepared by that Department which included provision for the Coast Guard, Coast and Geodetic Survey, and the Public Health Service. We are informed that those estimates included \$3,482,000 for these groups as an added expense in 1968 arising from new legislation. As of the effective dates of these services, the cost in 1967 is estimated at \$1,749,000. These figures are included in the estimates developed above.

The 1968 increase in fund requirements therefore reflects \$200,000 for increased workload and unit rates in the basic program, and \$1,733,000 to carry on a full year basis the new legislation.

INTRODUCTION OF ASSOCIATES

Senator HILL. Now, Dr. Gehrig, retired pay of commissioned officers.

All right, Doctor, you may proceed, sir.

Dr. GEHRIG. Thank you, sir. I have with me Dr. John Walsh, the Director of the Division of Direct Health Services, and also Mr. Richard Clague of our Finance Division.

Senator HILL. We are glad to have you gentlemen with us.

You got the full amount you requested, did you not?

Dr. GEHRIG. Yes, Senator. I have a statement, Mr. Chairman, if I may read it.

Senator HILL. All right.

MANDATORY REPAYMENTS

Dr. GEHRIG. This appropriation authorizes such amounts as may be necessary for certain mandatory payments under two separate programs.

PAYMENTS TO RETIRED OFFICERS OF PUBLIC HEALTH SERVICE AND SURVIVORS OF DECEASED RETIRED OFFICERS

The first program covers payments to retired officers of the Public Health Service and to survivors of deceased retired officers. Benefits to retired officers are authorized by section 211 of the Public Health Service Act and 10 United States Code 1201, while those to survivors are authorized by the retired servicemen's family protection plan (10 U.S.C., ch. 73; 42 U.S.C. 213a). The amounts of these benefits are fixed by law and payments are not subject to administration control.

Senator HILL. In other words, you have no discretion about that?

BUDGET REQUEST

Dr. GEHRIG. No, sir; we do not.

The estimated requirements of \$5,898,000 for fiscal year 1968 is based on a projection of beneficiaries now being paid with adjustments for anticipated additions and terminations. On June 30, 1966, 618 retired officers and 48 survivor annuitants were on the roll. It is estimated that the number of retired officers will reach 682 by June 30, 1967, and 747 by the end of fiscal year 1968. The projection contemplates that payments will be made to 54 survivor annuitants on June 30, 1967, and 60 on June 30, 1968.

MEDICAL CARE FOR DEPENDENTS AND RETIRED PERSONNEL

The second program financed under the appropriation is the provision of medical care to dependents and retired personnel under the Dependents' Medical Care Act. Expenses of the dependents' medical care program cover the cost of medical care provided under contractual arrangements either in non-Federal or uniformed service facilities, to dependents of eligible personnel of the Coast Guard, the Environmental Science Services Administration, and the Public Health Service.

MEDICAL PROVISION LIBERALIZATION

Public Law 89-614, approved September 30, 1966, liberalizes the medical provisions of the Dependents' Medical Care Act to provide benefits to retired personnel and dependents that will be more in line with those provided under the Federal Employees Health Benefits Act and the new social security health program for the aged.

OUTPATIENT AND IMPROVED INPATIENT CARE

The major new benefits provide outpatient care and improved inpatient care to dependents. They provide a program of care in civilian hospitals for retired personnel and their dependents. They provide aid to military parents who have physically or mentally handicapped children who need special care.

The provisions of this law became effective January 1, 1967, except for those provisions related to patient care for dependents of active duty personnel. This part of the amendments became effective October 1, 1966. The 1968 estimate of \$7,493,000 is \$1,933,000 above estimated requirements for fiscal year 1967. The increase is principally related to the necessity to fund the expanded benefit program for a full year during 1968 instead of only a part of a year as in 1967.

BUDGET REQUEST

The total estimate for 1968, covering both programs, is \$13,391,000. I shall try to answer any questions which you may have.

MANDATORY PAYMENTS

Senator HILL. You have no discretion in these matters? It is fixed by statute, isn't that right?

Dr. GEHRIG. That is correct, sir.

Senator HILL. And the increase is due to the fact we amended the law in the 89th Congress, isn't that right?

Dr. GEHRIG. That's right, and it added some very important areas of support here and these increases are practically all related to this change in law. There is a very minor amount that relates to an increased cost of contract hospitalization.

Senator HILL. So, as I say, the increase really is fixed by statute? In other words, when we amended the law in the 89th Congress, we then and there provided for these additional benefits and required the appropriations therefor; is that right?

Dr. GEHRIG. That is correct.

Senator HILL. Senator Bartlett?

NUMBER OF RETIRED OFFICERS

Senator BARTLETT. I was startled by the small number of retired officers. Does this possibly mean that very few make a career of the Public Health Service?

Dr. GEHRIG. No, sir; I think in part this may be true. But the organization itself of commissioned officers totals about 5,900, so we are not a large group, although the total employees of the Public Health Service is approximately 38,000.

I think the number, while small, probably reflects the size of the organization more than anything. I would add, however, that the Public Health Service in its commissioned corps, for example, in the medical officer group, has a rather large turnover rate of young men who come in for shorter periods of time and do not remain on for a full career.

ACCESS TO MILITARY EXCHANGE AND COMMISSARY

Senator BARTLETT. Does the Public Health Service also have access to commissaries and PX's of the military, if they are available?

Dr. GEHRIG. Yes, sir.

Senator BARTLETT. Does this situation maintain itself upon retirement?

Dr. GEHRIG. This does.

Senator BARTLETT. And can the retired officer go to a Public Health hospital for treatment?

Dr. GEHRIG. Yes, he may. We are considered part of the uniformed services and our medical facilities, as theirs, are available to our retired individuals as well as individuals retiring from the Military Establishments.

PAYMENTS TO WIDOWS

Senator BARTLETT. What part, what percentage of a retired officer's pay does his widow receive upon his death?

Dr. GEHRIG. There is an opportunity for the officer, while on active duty, to elect the percentage his widow may receive as an annuity. The annuity that a person is entitled to elect may be 50, 25, or 12½ percent of the reduced amount of his retired pay.

This selection, I think, is common to all of the services and you decide ahead of time what you feel your wife and family would require if you died in a retired status.

Senator BARTLETT. Do you pay into a retirement fund?

Dr. GEHRIG. This is a noncontributory fund during the active duty period.

Senator BARTLETT. Why doesn't everyone choose one-half?

Dr. GEHRIG. If one retires, the check he receives is proportionately decreased to provide for the survivor's annuity. If I elected to give my wife only one-quarter, my check during my retired lifetime would be more than it would be if I elected a survivor annuity of one-half.

Senator BARTLETT. My advice to you is give her half.

Dr. GEHRIG. I have.

Senator HILL. Are you going to address yourself to comprehensive health planning and services?

Dr. GEHRIG. We have Dr. Guthrie here.

Senator HILL. Fine. And thank you, Dr. Gehrig.

COMPREHENSIVE HEALTH PLANNING AND SERVICES

STATEMENTS OF EUGENE H. GUTHRIE, ASSOCIATE SURGEON GENERAL; JAMES H. CAVANAUGH, DIRECTOR; RONALD BRAND, ASSISTANT TO THE DIRECTOR, OCHPD; WILLIAM H. STEWART, SURGEON GENERAL; G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER, PUBLIC HEALTH SERVICE; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

COMPREHENSIVE HEALTH PLANNING AND SERVICES

To carry out sections 314(a) through 314(e) of the Act, \$143,628,000, of which \$5,000,000 shall be available until June 30, 1969, for grants pursuant to such section 314(a).

Amounts available for obligation

	1967	1968
Appropriation.....	\$4,500,000	\$143,628,000
Comparative transfers from—		
“Injury control”.....	80,000	
“Chronic diseases”.....	59,513,000	
“Community health services”.....	10,577,000	
“Communicable diseases”.....	232,000	
“Control of tuberculosis”.....	17,950,000	
“Control of venereal diseases”.....	6,229,000	
“Dental services and resources”.....	1,000,000	
“Hospital construction activities”.....	5,000,000	
“Medical care services”.....	6,700,000	
“Radiological health”.....	5,000,000	
“Mental health research and services”.....	6,750,000	
“Office of the Surgeon General, salaries and expenses”.....	26,000	
Total.....	123,557,000	143,628,000

Obligations by activity

Description	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Grants:						
Planning.....		\$9,000,000		\$15,000,000		+\$6,000,000
Formula.....		55,250,000		62,500,000		+7,250,000
Project:						
Cancer.....		14,500,000		14,500,000		
Mental retardation.....		5,500,000		5,500,000		
Tuberculosis control.....		14,950,000		17,500,000		+2,550,000
Venereal disease control.....		6,229,000		7,000,000		+771,000
Radiological health.....		2,500,000		2,500,000		
Chronic and disabling diseases.....		10,500,000		10,500,000		
Improving the provision of health services.....		3,500,000		5,000,000		+1,500,000
Direct operations.....	204	1,628,000	244	3,628,000	+40	+2,000,000
Review and approval.....	81	756,000	90	1,200,000	+9	+444,000
Program direction and technical assistance.....	123	872,000	154	2,428,000	+31	+1,556,000
Total obligations.....	204	123,577,000	244	143,628,000	+40	+20,071,000

¹ Includes \$5,000,000 appropriated in 1967 under the head, “Hospital construction activities,” for the purposes of areawide planning of health facilities.

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Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	204	244	+40
Full-time equivalent of all other positions.....	2	12	+10
Average number of all employees.....	111	228	+117
Personnel compensation:			
Permanent positions.....	\$1,123,000	\$2,414,000	+\$1,291,000
Positions other than permanent.....	31,000	162,000	+131,000
Other personnel compensation.....	1,000	6,000	+5,000
Total personnel compensation.....	1,155,000	2,582,000	+1,427,000
Personnel benefits.....	103,000	207,000	+104,000
Travel and transportation of persons.....	62,000	459,000	+397,000
Transportation of things.....	30,000	54,000	+24,000
Rent, communications, and utilities.....	34,000	147,000	+113,000
Printing and reproduction.....	34,000	58,000	+24,000
Other services.....	12,000	30,000	+18,000
Project contracts.....	150,000		-150,000
Services of other agencies.....		6,000	+6,000
Supplies and materials.....	12,000	36,000	+24,000
Equipment.....	36,000	49,000	+13,000
Grants, subsidies, and contributions.....	121,929,000	140,000,000	+18,071,000
Total obligations by object.....	123,557,000	143,628,000	+20,071,000

Summary of changes

1967 proposed supplemental.....	\$4,500,000
Comparative transfers from:	
" Injury control".....	80,000
" Chronic diseases".....	59,513,000
" Community health services".....	10,577,000
" Communicable diseases".....	232,000
" Control of tuberculosis".....	17,950,000
" Control of venereal diseases".....	6,229,000
" Dental services and resources".....	1,000,000
" Hospital construction activities".....	5,000,000
" Medical care services".....	6,700,000
" Radiological health".....	5,000,000
" Mental health research and services".....	6,750,000
" Office of the Surgeon General, salaries and expenses".....	26,000
Total estimated obligations, 1967.....	123,557,000
1968 estimated obligations.....	143,628,000
Total change.....	+20,071,000

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1665

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built in 1. Annualization of 97 new positions and related costs authorized in 1967				\$1,427,000
B. Program:				
1. Planning grants		¹ \$9,000,000		6,000,000
2. Formula grants		55,250,000		7,250,000
3. Project grants:				
(a) Tuberculosis control		14,950,000		2,550,000
(b) Venereal disease control		6,229,000		771,000
(c) Improving the provision of health services		3,500,000		1,500,000
4. Review and approval of grants	81	756,000	9	140,000
5. Program direction and technical assistance	123	872,000	31	635,000
Total program increases			40	18,846,000
DECREASES				
A. Nonrecurring program costs related to new staff in 1967				-197,000
B. 1 less day of pay in 1968 (261 days in 1967; 260 days in 1968)				-5,000
Total decreases				-202,000
Total net changes requested			+40	+20,071,000

¹ Includes \$5,000,000 appropriated in 1967 under the head "Hospital construction activities" for the purposes of areawide planning of health facilities.

EXPLANATION OF CHANGES

Planning grants

An increase of \$6,000,000 is requested to be distributed among the following areas:

- (1) Grants to States for comprehensive State health planning (\$2,500,000);
- (2) Project grants for area-wide health planning (\$2,500,000);
- (3) Project grants for training, studies, and demonstrations for comprehensive health planning (\$1,000,000).

Formula grants

An increase of \$7,250,000 is requested to support grants to States for comprehensive public health services. These grants will assist State health and mental health agencies to establish and maintain adequate public health services of all kinds including training of personnel for State and local health work.

Project grants

a. *Tuberculosis control*.—An increase of \$2,550,000 is requested to improve and intensify nationwide tuberculosis control activities.

b. *Venereal disease control*.—An increase of \$771,000 is requested to support the nationwide effort to eradicate syphilis. This will provide increased case-finding and follow-up efforts which are required to maintain the eradication effort.

c. *Improving the provision of health services*.—An increase of \$1,500,000 is requested to support more projects on the development, testing, and evaluation of methods of providing health services to communities, improvement of laboratory services and other supporting services essential to meet new demands such as those created by medicare, and to improve and increase the provision of family planning services.

Review and approval

An increase of nine positions and \$140,000 is requested to strengthen the review and approval activities of this program. Executive secretaries will be assigned to each of the nine regional offices to provide professional full-time support to the regional grant review committees.

Program direction and technical assistance

An increase of 31 positions and \$635,000 is requested to provide intensive and in-depth field and headquarters support and assistance to State and local com-

munities in implementing the provisions of P.L. 89-749. Twenty-five positions will be made available for assignment to State or local planning agencies on request, to work under the supervision of the local director and as part of his staff. The remaining six positions will work in the area of developing methods of measuring program accomplishments.

Built-in

An increase of \$1,427,000 is requested to support the full year costs of 97 positions new in 1967 and funded for 15 per cent of the year. The increase is partially offset by \$197,000 for nonrecurring contracts, equipment and other program costs.

Introduction

In enacting the "Partnership for Health" legislation (P.L. 89-749), the Congress declared that "fulfillment of our national purpose depends on promoting and assuring the highest level of health attainable for every person, in an environment which contributes positively to healthful individual and family living." Recognizing the changing character of health problems, the Congress found that "attainment of this goal depends on an effective partnership, involving close inter-governmental collaboration, official and voluntary efforts, and participation of individuals and organization."

The Congress then declared that "Federal financial assistance must be directed to support the marshalling of all health resources. Additionally, it found that "comprehensive planning for health services, health manpower and health facilities is essential at every level of government." This comprehensive health planning program will provide the resources for developing and strengthening this partnership effort.

Comprehensive health planning is aimed at ensuring that the health needs of the nation receive necessary attention and action. It seeks to achieve an effective allocation of scarce resources between the many pressing health needs of the nation.

In any given State there are more than 40 different programs receiving Federal support for health or health related purposes. These include funds that create resources, provide services or support programs to encourage innovation and to demonstrate new methods. These programs are interrelated in purpose and combined at the point of delivery with State, local and private dollars.

A great deal of planning is undertaken in connection with each of these programs, considered separately. Some of the planning is Statewide. Some of it is based on a locality or a metropolitan area.

But nowhere at the Federal level and seldom in the States has there been a satisfactory method for relating these plans to each other and deciding on relative priorities. The Comprehensive Health Planning and Health Services Act of 1966 is an attempt to provide a focus for this kind of planning and this kind of decision.

Comprehensive health planning neither negates nor diminishes the need for continued or expanded functional or specialized planning. Operating State agencies and other organizations will continue to plan for specialized programs, such as the construction of health facilities, the development and expansion of community mental health programs, regional medical programs, programs in environmental control, or services for the chronically ill or mentally retarded, and increasing the supply and effective utilization of trained health manpower. The Comprehensive Health Planning legislation provides a framework for strengthening these efforts by relating objectives in these specialized areas to each other and to the overall needs and resources of the State.

Under the provisions of P.L. 89-749 three programs were authorized to begin in fiscal year 1967. This included comprehensive State health planning, areawide health planning, and training, studies and demonstrations for comprehensive health planning. In 1968, subsections (d) and (e) of Section 314 become effective, providing for (1) replacement of a variety of separate categorical formula grants for health services by a single State grant for comprehensive public health services, and (2) expanding and increasing the flexibility available for the types of programs to be supported under the Project Grants for Health Services Development.

The Public Health Service is requesting \$143,628,000 in 1968, an increase of \$20,071,000 over the 1967 level, to carry out the activities authorized by the Comprehensive Health Planning and Public Health Services Amendments of 1966.

Planning grants—Summary of program

	1967 estimate	1968 estimate	Increase
A. Grants to States for comprehensive State health planning..	\$2,500,000	\$5,000,000	+\$2,500,000
B. Project grants for areawide health planning.....	15,000,000	7,500,000	+2,500,000
C. Project grants for training, studies, and demonstrations..	1,500,000	2,500,000	+1,000,000

¹ Authority is requested in the proposed supplemental to permit the unobligated balance of funds appropriated for areawide planning of health facilities, as authorized by sec. 318, to be used for the broadened areawide health planning activities authorized under subsec. 314(b) of the Public Health Services Act, as amended by Public Law 89-749.

The test of the effectiveness of Federal, State and local health efforts is the impact on the health of the individual. The new medicare program has revealed some serious gaps in our ability to provide all needed health services and to make them available and accessible to citizens in each community.

How can we focus all community health resources on the primary problem, provision of health services to people? One approach is an effective comprehensive health planning program directed at utilizing and coordinating all of the health resources available to the community.

The planning process supported by this new program provides for development of local planning approaches which will assist the States and communities to set their own health goals rather than relying on Federal determination of local needs. It will give States some of the resources needed to coordinate the numerous and varied health programs presently operating. By identifying priorities and needs the community will be able to correct deficiencies and provide better health services.

The following programs provide basic support for the development and strengthening of planning for health at Federal, State, and local levels.

A. FORMULA GRANTS FOR COMPREHENSIVE STATE HEALTH PLANNING

The Surgeon General is authorized to make formula grants to States based on population and per capita income to assist the States in comprehensive and continuing planning for their current and future health needs. For the fiscal years 1967-1968, the period covered under the present authorization, the grant may cover up to 700 per cent of the State's cost for this program. The grant awarded to any State must equal at least one per cent of the total amount appropriated for the program in each fiscal year. These grants may be only to State agencies. Eligibility of a State to receive the grants depends upon approval by the Surgeon General of a State plan for comprehensive health planning. The plan must designate or establish a State health planning agency and a State health planning council which will be advisory to the agency.

In 1968, we are requesting \$5,000,000 for formula planning grants, an increase of \$2,500,000 over the level requested in 1967. If \$5,000,000 is appropriated, each State would receive a minimum of \$50,000 in 1968.

This grant will support comprehensive State-wide planning for health services (public and private), including the facilities and manpower required to provide such services and the coordination of area-wide health planning activities; to stimulate cooperative efforts among State, local and private agencies and organizations concerned with health matters; and to increase cooperation between these groups and similar groups in the fields of education, welfare, and rehabilitation.

The law requires that a majority of the membership of each State health planning council shall consist of representatives of consumers of health services. The use of these councils will bring together service providers and consumers to identify areas of need and to establish goals and priorities for the various health programs, assuring that their efforts will coincide with other economic and social development programs within the State.

In developing its comprehensive plan for health services, the State agency will work with all applicable resources—including government, voluntary, and private agencies. As an example, this would involve health, welfare and education agencies, medical societies, and voluntary organizations engaged in a specific disease control and rehabilitation program, to evaluate plans and develop coordinated actions that relate to the total health needs of the population.

B. PROJECT GRANTS FOR AREA-WIDE HEALTH PLANNING

Within a State, the needs of various communities and regions differ widely. To enable an area to develop programs tailored to its own requirements and to fit into a State-wide comprehensive plan, project grants for area-wide planning will be awarded to public or nonprofit regional, metropolitan area, or other local area health planning agencies. The grant may cover up to 75 percent of the agency's costs. A total of \$7,500,000 is requested in 1968 for these area-wide planning grants, an increase of \$2,500,000 over the 1967 level.

Effective July 1, 1967, P.L. 89-749 repeals Section 318 of the Public Health Service Act which provides grants for area-wide health facility planning. As a result, area-wide planning groups will broaden the scope of their activities from their previous focus on facility planning to planning for the provision of the full spectrum of health services in their area. This differs from the previous concentration by some of these area-wide groups on planning for the provision of services solely from a hospital or medical facility base. Applications for the support of the area-wide health planning projects must be submitted to the designated State planning agency funded under the formula grant for planning provisions of P.L. 89-749.

These grants will assist in developing (and from time to time revising) comprehensive regional, metropolitan area, or other local area plans for coordination of existing and planned health services, including the facilities and persons required for the provision of such services. The area-wide health planning agency, in collaboration with other planning and operating agencies and organizations, should serve as the focus for community discussion and identification of health goals and needs and as the stimulator of action to coordinate and make maximum use of existing and planned facilities, services and manpower in the fields of physical, mental, and environmental health.

Under this program, some communities will be able to build on the initial developmental and planning work of area-wide hospital and medical facilities planning groups.

In development of an area-wide plan, cooperation among local resources such as departments of health, welfare, education and rehabilitation, voluntary organizations, medical societies, hospitals and other facilities will be essential. All specific health service projects, such as home care, mass immunization, and screening programs will be considered in developing the area-wide plan and will be tailored to meet special health, manpower and facilities problems that may exist in the area.

Current patterns of health services in some communities are not meeting the needs of the people, although available health resources, if properly organized, would be sufficient. Thus, a project in an urban area might develop a plan redirecting and coordinating the use of available or additional health resources to meet the needs of all persons in the area. A variety of approaches could be adopted depending upon the nature of the area and the specific problems involved. Development of a single community emergency service, for example, instead of three or four different ones, each of which duplicates use of expensive equipment and scarce personnel, might lead to a better utilization of health services. Another area might develop a plan whereby rural people could be brought to a central service point if the sparse population made it impractical to construct facilities or provide services throughout the area.

C. PROJECT GRANTS FOR TRAINING, STUDIES, AND DEMONSTRATIONS FOR COMPREHENSIVE HEALTH PLANNING

Much of the success of both State and area-wide comprehensive health planning activities will depend upon the skills and techniques of planning personnel. Since few persons in the health field have been trained in, or have been able to devote their full efforts to comprehensive health planning, there is a need for experimentation with and training in techniques, such as program evaluation and planning, health status surveys, analyses of patient origin and preference and projections of population growth and movement and systems and cost benefit analysis. Concurrently, there is a need for studies, demonstrations and training aimed at developing closer working relationships between health personnel and others concerned with community planning and development.

Section 314(c) of the PHS Act authorizes the Surgeon General to make grants for training, studies, or demonstrations for the development of improved or more effective comprehensive health planning throughout the nation. Highest priority

for Section 314(c) support will be given to training activities, especially those that promise most immediately to increase the supply of qualified health planners.

Among the projects which would be supported are:

A. A variety of university-based training programs. The development of curricula would have high priority among the initial efforts of these institutions. The curricula would provide (1) full-time graduate study in comprehensive health planning, (2) specialized courses in planning available to students enrolled in graduate health programs, (3) specialized health courses available to students enrolled in graduate planning or related programs, and (4) a program of continuing education including short courses, conferences, symposia or other methods of providing initial or refresher training for health and planning professionals and orienting citizens or other interested groups.

B. Studies and demonstrations which would aid a community to develop or improve its capacity to organize and conduct comprehensive health planning. For example, employment in health departments, hospital planning councils or health and welfare agencies of persons trained in planning to introduce techniques and methods of planning and to maintain liaison with related planning agencies; assignment of public health personnel to other agencies to provide technical assistance with health aspects of other programs; establishment of community councils of health, health-related welfare and planning officials to develop broad strategies for program coordination.

C. Projects demonstrating different organizational and operational systems for multi-state metropolitan planning. These may utilize State or regional commissions, existing general purpose regional councils of government, such as Washington's Council of Governments, or San Francisco's Association of Bay Area Governments.

D. Studies and demonstrations which would provide generally new knowledge, methods and techniques contributing to the improvement of planning activities. For example, development of information systems to serve health and other community planning needs, or special projects linking health services with the community development activity, such as urban renewal, conservation, or rehabilitation.

In 1968 we are requesting \$2,500,000 for these grants, an increase of \$1,000,000 over the 1967 level.

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Allocations of grants to States for comprehensive State health planning

State or territory	1966 allocation	1967 allocation	1968 estimate
Alabama.....		\$52,200	\$104,400
Alaska.....		25,000	50,000
Arizona.....		25,000	50,000
Arkansas.....		31,200	62,500
California.....		158,200	316,300
Colorado.....		25,000	50,000
Connecticut.....		25,000	50,000
Delaware.....		25,000	50,000
District of Columbia.....		25,000	50,000
Florida.....		68,000	136,100
Georgia.....		59,200	118,300
Hawaii.....		25,000	50,000
Idaho.....		25,000	50,000
Illinois.....		92,300	184,700
Indiana.....		50,700	101,300
Iowa.....		30,600	61,300
Kansas.....		25,100	50,200
Kentucky.....		45,800	91,700
Louisiana.....		49,700	99,400
Maine.....		25,000	50,000
Maryland.....		32,400	64,800
Massachusetts.....		47,600	95,200
Michigan.....		78,700	157,400
Minnesota.....		39,500	79,000
Mississippi.....		42,600	85,200
Missouri.....		45,600	91,300
Montana.....		25,000	50,000
Nebraska.....		25,000	50,000
Nevada.....		25,000	50,000
New Hampshire.....		25,000	50,000
New Jersey.....		59,500	118,900
New Mexico.....		25,000	50,000
New York.....		150,800	301,600
North Carolina.....		67,800	135,500
North Dakota.....		25,000	50,000
Ohio.....		102,200	204,300
Oklahoma.....		31,400	62,900
Oregon.....		25,000	50,000
Pennsylvania.....		116,900	233,700
Rhode Island.....		25,000	50,000
South Carolina.....		40,500	81,000
South Dakota.....		25,000	50,000
Tennessee.....		54,600	109,100
Texas.....		127,200	254,500
Utah.....		25,000	50,000
Vermont.....		25,000	50,000
Virginia.....		52,500	105,000
Washington.....		29,900	59,900
West Virginia.....		25,000	50,000
Wisconsin.....		43,900	87,800
Wyoming.....		25,000	50,000
Guam.....		25,000	50,000
Puerto Rico.....		48,400	96,700
Virgin Islands.....		25,000	50,000
American Samoa.....		25,000	50,000
Totals.....		2,500,000	5,000,000

Formula grants

	1967 estimate	1968 estimate	Increase
Grants, subsidies, and contributions.....	\$55,250,000	\$62,500,000	+\$7,250,000

Since 1935, the Public Health Service, through grants-in-aid, has provided financial assistance to States for public health activities on a continuing basis. This assistance has usually been in the form of separate categorical grants earmarked for use in meeting specific disease problems. Grants were made for general health services, tuberculosis control, chronic disease services, heart disease control, cancer control, mental health services, dental services, radiological health services, and home health services. Funds appropriated for each of these categories could not be transferred by the States to any other of the specific categories, and could not be used to support other public health activities. This lack of flexibility shaped a highly structured approach in federally-assisted health programs.

Public Law 89-749 removed the categorical restrictions effective with fiscal year 1968 and authorized the Surgeon General to make grants to State health and mental health authorities to assist States in establishing and maintaining adequate public health services including the training of personnel for State and local health work. This new single grant to States provides a flexible means for support, development and expansion of public health services aimed at meeting the health needs of the citizens of each State according to priorities established by the State.

From the amount appropriated each year, the Surgeon General is authorized to make allotments determined on the basis of population and financial need to States which have a State plan approved by the Surgeon General. The State plan must be administered by the State health authority (or, with respect to mental health, the State mental health authority), and must give assurances that the grants will promote public health services in localities and that there will be maximum local participation. Health services under the plan must be in accordance with standards prescribed by the Surgeon General as to scope and quality.

New funding provisions of P.L. 89-749 are:

(1) Each State will be paid from its annual allotment a Federal share of the expenditures incurred by the State in accordance with its approved plan. The level of Federal matching of State funds will vary from State to State, ranging from one-third to two-thirds of the costs incurred, depending on each State's per capita income.

(2) Public health services supported by these grants must be in accordance with plans developed by the State planning agency created under the provisions of P.L. 89-749.

(3) At least 15 percent of a State's allotment must be available only to the State mental health authority for the provision of mental health services.

Activities that might be supported by these funds are (a) nursing services to treat, care for, rehabilitate, control, or reduce the impact of chronic diseases; (b) stimulation of programs for the prevention and control of dental disease; (c) organize and assist manpower programs to extend and make more efficient use of professional health resources; (d) immunization, epidemiology, follow-up, care, case finding and treatment services for rheumatic fever, tuberculosis, venereal diseases, or other communicable diseases; (e) provision, expansion, and coordination of services to reach persons who do not have ready access to such services; (f) prevention or reduction of the incidence or impact of mental illness or disability by community mental health services; (h) protecting people from foodborne diseases, radiation, pesticides, and other environmental hazards, and (i) reducing the toll of death and disability from accidents.

A total of \$62,500,000 is requested for this grant program in 1968, an increase of \$7,250,000 over the 1967 level.

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Allocations of grants for comprehensive public health services

State or territory	1966 allocation ¹	1967 allocation ¹	1968 estimate
Alabama.....	\$1,250,200	\$1,192,500	\$1,316,100
Alaska.....	371,100	371,800	381,400
Arizona.....	549,000	550,500	607,400
Arkansas.....	847,000	799,200	867,900
California.....	3,763,500	3,651,100	4,316,200
Colorado.....	587,300	582,600	652,100
Connecticut.....	628,500	623,100	724,200
Delaware.....	364,200	364,900	382,900
District of Columbia.....	394,200	393,500	421,900
Florida.....	1,801,900	1,708,600	1,917,400
Georgia.....	1,361,100	1,301,000	1,457,700
Hawaii.....	394,300	393,500	418,700
Idaho.....	425,100	421,900	446,300
Illinois.....	2,386,200	2,282,100	2,659,000
Indiana.....	1,288,900	1,226,500	1,399,400
Iowa.....	881,100	816,900	913,500
Kansas.....	716,400	675,500	754,600
Kentucky.....	1,155,400	1,090,700	1,202,600
Louisiana.....	1,148,000	1,105,900	1,282,600
Maine.....	461,400	460,300	494,900
Maryland.....	820,400	804,000	931,000
Massachusetts.....	1,332,600	1,252,700	1,441,100
Michigan.....	1,994,100	1,879,500	2,173,900
Minnesota.....	1,048,000	989,600	1,115,300
Mississippi.....	1,033,300	971,300	1,053,100
Missouri.....	1,270,600	1,202,400	1,360,900
Montana.....	411,900	412,100	436,800
Nebraska.....	531,400	526,000	577,200
Nevada.....	375,800	379,000	395,000
New Hampshire.....	391,500	392,400	416,300
New Jersey.....	1,497,800	1,443,900	1,686,400
New Mexico.....	463,400	465,400	501,300
New York.....	4,002,800	3,802,500	4,444,400
North Carolina.....	1,538,000	1,464,700	1,640,500
North Dakota.....	411,700	410,500	433,300
Ohio.....	2,508,100	2,373,800	2,736,100
Oklahoma.....	852,700	804,500	890,900
Oregon.....	592,200	584,200	652,900
Pennsylvania.....	3,038,800	2,856,900	3,264,100
Rhode Island.....	405,900	406,000	437,600
South Carolina.....	927,300	874,600	965,500
South Dakota.....	420,500	417,400	441,400
Tennessee.....	1,340,200	1,275,300	1,411,800
Texas.....	2,858,100	2,747,000	3,125,000
Utah.....	446,800	444,500	479,900
Vermont.....	378,900	378,100	392,300
Virginia.....	1,256,400	1,196,300	1,354,700
Washington.....	827,600	773,400	878,200
West Virginia.....	677,800	650,500	713,600
Wisconsin.....	1,150,800	1,089,400	1,235,700
Wyoming.....	373,800	373,400	385,000
Guam.....	298,700	304,200	307,000
Puerto Rico.....	1,041,200	1,026,700	1,120,500
Virgin Islands.....	256,100	265,700	267,300
American Samoa.....			266,400
Total.....	57,500,000	55,250,000	62,500,000

¹ Totals shown represent a combination of grants for cancer control, chronic illness and aged, dental health general health, heart disease control, home health services, mental health, radiological health, and tuberculosis control.

Project grants for health service development—Summary of program

	1967 estimate	1968 estimate	Increase
Cancer	\$14,500,000	\$14,500,000	
Mental retardation	5,500,000	5,500,000	
Tuberculosis control	14,950,000	17,500,000	+\$2,550,000
Venereal disease control	6,229,000	7,000,000	+771,000
Radiological health	2,500,000	2,500,000	
Chronic and disabling diseases	10,500,000	10,500,000	
Improving the provision of health services	3,500,000	5,000,000	+1,500,000

Under P.L. 89-749, part (e) of Section 314 authorizing project grants for health service development becomes effective on July 1, 1967. The distribution of funds for these project grants, shown above, is advisory only. The figures shown represent the best estimates at the current time of the *probable* distribution of funds required to support project grant applications to meet various health problems. This increased flexibility is another action to permit greater participation by local communities and the States in the identification of health problems and allocation of the resources.

Another major change in the same direction, is the planned decentralization of review and approval on these grants to the regions. Nine regional Health Advisory Review Committees are being established to advise the Regional Health Director and to recommend approval or disapproval of project grants.

Health services grants applications to be supported under this grant program must be reviewed by the designated State Planning Agency funded under Section 314(a).

These grants are awarded to non-profit organizations and institutions, and State and local health agencies for developing, testing, and evaluating community services with emphasis on the application of new techniques and methods in demonstrating the provision of health services and training.

The projects supported by this grant serve as the bridge between research and full-scale application of new or improved health service. Once proven in a demonstration or pilot undertaking in a variety of settings, these methods are disseminated to other communities and integrated into ongoing health programs.

Some objectives of this program are:

1. To effect further reductions in the death rates from cervical cancer. In 1967, support will be extended to more than 150 hospital-based detection projects, aimed at a low income, high incidence group.

2. To provide a two-pronged approach to the health problems of the mentally retarded. Project grants will support educational institutions, communities, and States in planning, development, and coordination of training programs to increase the number of skilled workers in mental retardation. Additional grants will provide assistance for coordination of resources and information, development of statistical bases, and demonstration of improved means of delivering services and care.

3. To support the establishment of high-quality out-patient clinical programs for the treatment and prevention of tuberculosis in cities, counties and regions where such a need exists. An increase of \$2,550,000 is requested for 1968 for expanded programs in this area.

4. To provide personnel in lieu of funds to State and local health agencies in establishing and maintaining effective venereal disease control programs. An increase of \$771,000 is requested for 1968 to support epidemiological investigations and follow-up treatment to reduce the level of infectious syphilis.

5. To support field testing of techniques for early detection, improve diagnosis, and rehabilitation of chronic respiratory disease victims, demonstrations of satellite community clinical services for neurological patients; and demonstrations of hemodialysis procedures in the treatment of chronic kidney disease. For heart disease, stroke, and related problems of the aged, project grants will support field testing of techniques for mass screening, diagnostic validation, treatment, rehabilitation, and follow up.

6. To support the training of specialists and technicians who must carry out the wide range of radiological health problems in States and at the local level. Lack of sufficient trained personnel contributes to unnecessary radiation exposure for members of various occupations and the public.

7. To support an increased number of projects in areas such as coordination of care, improved organization of health services, family planning services, and

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improvement of laboratory services, an increase of \$1,500,000 is requested for project grants to improve the provision of health services.

In summary, a total of \$62,500,000 is requested for these Comprehensive Health Services Project Grants in 1968. This is an increase of \$4,821,000 over 1967.

Direct obligations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	204	\$1,258,000	244	\$2,789,000	+40	+\$1,531,000
Other expenses.....		370,000		839,000		+469,000
Total.....	204	1,628,000	244	3,628,000	+40	+2,000,000

A full professional staff is essential if the Public Health Service is to provide the necessary imaginative and efficient programming, analysis, evaluation, and administration of the grant programs authorized by the Comprehensive Health Planning and Public Health Services Act of 1966.

An increase of 40 positions and \$775,000 is requested in new program to administer the provisions of this act. The additional staff requested will provide the type of central direction and field organization required to make the programs truly effective. A detailed summary of the requested increases is provided below.

Review and approval:

1967 estimate.....	\$756,000
1968 estimate.....	1,200,000
Increase	+444,000

In 1968, for the first time, all applications for formula grants and project grants for Comprehensive Health Services will be received, reviewed and approved in the regional offices. The practice to date has been to have one advisory committee in Washington, D.C. review all grant applications, and for approval of all grants to be made solely at headquarters.

In line with the present policy as stated by both the Secretary and the Surgeon General, every effort is being made to bring the decisions on health needs and services closer to the State and local level. To that end we have requested a strengthening of the regional offices in 1967.

We also plan to establish Regional Health Advisory Committees in each of the nine D.H.E.W. regions. All grant applications will be sent to the regional office rather than a multiplicity of programs in Washington. The Regional Health Advisory Review Committees will review these grants, and make their recommendations for approval and disapproval to the Regional Health Director. These committees will review applications for Planning Grants to States, Area-wide Planning Grants, Formula grants for health services, and Project grants for health services.

Experience in other programs has shown that a full-time professional executive secretary is necessary to the successful operation of such a review committee. This individual assists in the initial review of grant applications; performs site and review visits along with committee members, and works closely with potential grant applicants.

We are therefore requesting nine positions and \$140,000 to establish an executive secretary position in each of nine regions so as to strengthen the regional review process. Such staff support is a prerequisite for gaining full value from the non-federal experts who will serve as members of these review committees.

An additional increase of \$304,000 provides for built-in changes due to the annualization of 18 positions new in 1967 and their related costs.

Program direction and technical assistance:

1967 estimate.....	\$872,000
1968 estimate.....	2,428,000
Increase	+1,556,000

Recognizing that trained manpower is one of the major keys to the success of State and local planning, an increase of 25 positions is requested to make Fed-

eral personnel available for assignment. This will make a total of 50 such positions available for assignment to State and local planning agencies in 1968. They will be placed in planning agencies on request, operating under the supervision of the local director and as a part of his staff. The assigness will form part of the essential nucleus of trained manpower needed to move forward in planning at the State and local level. Without such personnel the identification of problems, the gathering and analysis of data and the application of planning already done by other groups will continue to proceed slowly and on a part-time basis.

In recent years the Public Health Service has been concerned about the need for developing better methods for determining the impact of its formula grant and project grant programs. Requests from the States indicate that they too are concerned about developing better ways of measuring the total impact of health programs.

In the past our measurement of effectiveness of grant funds to the States was usually expressed in terms such as numbers of personnel employed, laboratory examinations performed, or home health visits made. Although this information has been helpful, it has failed to indicate the impact of Federal dollars on the health status of people. With the growth of improved measurement tools, such as refined sampling techniques, cost-benefit analysis and greater capability to handle large quantities of data, we believe more meaningful indices of accomplishments can be developed and serve as a basis for improved program evaluation.

We are requesting an increase of six positions to work specifically on developing improved methods of measuring program accomplishments.

An increase of 31 positions and \$635,000 is requested to expand the program direction and technical assistance activity. An additional increase of \$1,123,000 for built-in changes resulting from new positions authorized in 1967 is partially offset by a decrease of \$202,000 for nonrecurring program costs and one less day's pay in 1968.

New positions requested, fiscal year 1968—direct operations

	Grade	Annual salary
Review and approval: Public health program specialist (9).....	GS-14	135,954
Total (9).....		135,954
Program direction and technical assistance:		
Public health program specialist (11).....	GS-14	166,166
Public health program specialist (10).....	GS-13	128,730
Public health program specialist (6).....	GS-12	65,562
Public health program specialist.....	GS-9	7,696
Administrative assistant.....	GS-7	6,451
Clerical assistant.....	GS-5	5,331
Do.....	GS-4	4,776
Total (31).....		384,712
Total new positions, all activities (40).....		520,666

INTRODUCTION OF ASSOCIATES

Senator HILL. All right, Doctor, we are glad to have you here, sir. You may proceed, sir.

Dr. GUTHRIE. I would like to present the two gentlemen with me, Senator Hill. On my immediate right is Dr. James H. Cavanaugh, who is the Director of the Office of Comprehensive Planning and Development; and next to him, Mr. Ronald Brand, who is his assistant.

Senator HILL. Glad to have you with us.

PARTNERSHIP FOR HEALTH

Dr. GUTHRIE. I am pleased to have this opportunity to discuss with you the partnership for health program as it is shaped by Public Law

89-749 and also to report on what the Public Health Service has been doing to get ready for this new program.

As you know, this measure was passed by the 89th Congress during the last days of its session and signed into law by President Johnson just 5 months ago, on November 3, 1966. The intervening months have provided the Public Health Service with an opportunity to think and work through some of the problems and possibilities involved in programming. Now we are ready to begin a significant redirection of our efforts to protect the health of the Nation's population.

We consider that the leadtime provided by Congress and the President, prior to appropriations, has been most valuable. I know we are in a better position to explore with you today the opportunities inherent in this measure than we were five months ago.

STATE AND LOCAL PARTICIPATION

This period has also given our non-Federal partners an opportunity to evaluate the law, and their response has been highly favorable.

Senator HILL. You are speaking now of the States, are you not?

Dr. GUTHRIE. Yes, sir.

The States have indicated their eagerness to participate and so have many counties, cities, and towns. Professional health associations are working closely with us, as are voluntary health organizations, and leaders from the many segments of our society which have a stake in public health.

PROGRAM ATMOSPHERE

The context in which we are working and in which Public Law 89-749 was enacted is one of change—change in our view of the nature of health problems, change in our organization of health care, and change in the working relationships between local governments, State governments, the private sector and the Federal Government.

In this time of transition we are also striving to preserve and protect those concepts and techniques which have proved their worth. There are many accomplishments and programs of which we can be proud and which we must and will perpetuate.

Public Law 89-749 provides a promising blend of old and new. It introduces a new technique in public health—that of comprehensive health planning. It modernizes an established technique—the management of grants program; and it fuses grants to planning so as to achieve the best possible return from our total health investment.

U.S. HEALTH CARE EXPENDITURES

Today the total expenditure for health care in this country, from all sectors has grown to \$43 billion, or approximately 6 percent of the gross national product. Although shortages such as manpower are very real, it is the abundance of the health enterprise, not its paucity, that gives us challenge.

GENERAL AND SPECIAL GRANTS

In 1936 the Social Security Act laid the foundations of a Federal-State partnership in health by providing a general health grant available to support any part of a State's public health program. In the

intervening years, specific health problems aroused public and congressional concern and these problems were isolated for special attack with earmarked grants.

PROGRAM RESULTS

One result was a salutary growth of health resources, and some dramatic breakthroughs in health protection. Another result was that Federal assistance increasingly favored some dozen programs of disease control, locking State health efforts into the support of nationally defined health goals. And these goals did not always correspond to the most urgent needs of the State and its communities.

Awareness of this shortcoming prompted the search for alternate patterns of partnership. Two major readjustments were identified as imperative: (1) a chance for the State and localities to identify their own priorities of health needs, and (2) a change in funding which would free them to program according to those needs. These, in essence, are the opportunities which have been opened up by Public Law 89-749.

STATE AND LOCAL PLANNING

The newest concepts present in this law relate to planning. Section 314, in (a), (b), and (c), moves the decisionmaking process into the States and localities, closer to the people, closer to the professional providers of health care, and closer to the organizations most familiar with local health problems and resources.

These provisions of the act encourage planning, not as a static blueprint, but as a dynamic, continuing process of identifying needs and resources, evaluating progress, and making the choices that will most effectively serve the changing health needs of the people. This planning involves the selection of priorities, identification of obsolete activities, emphasis upon most urgent activities, and intelligent allocation of dollars, manpower, and facilities to provide services to the people.

PROVED PLANNING VALUES

Planning in itself is not new to public health. There has been planning, and its value is being proved in programs such as Hill-Burton with emphasis on planning for facilities; in the program for community mental health centers; and most recently in the regional medical programs for heart, cancer, and stroke.

COMPREHENSIVE HEALTH PLANNING

But there has not been anywhere the kind of comprehensive health planning which would enable a State Governor, for example, to view—and frequently review—the various health needs and resources of his State and determine their appropriate relationships in order to provide the best possible health care to the greatest number of people.

RESOURCE COMPETITION

Perhaps planning would be less necessary if there were no competition for resources and if our funds for public health were unlimited. But this is not the case. Our investment in health is large and getting

larger, but at some point there must be a limit. We do not and cannot assume that an infinite supply of money, manpower, or facilities will ever be available for health needs. There are too many other competing demands for attention and resources, both national and local.

Under these circumstances, I believe we are obliged to take our cue from the business world. And I wonder if any successful commercial enterprise in this country could afford to jeopardize its operations by failing to provide for careful and comprehensive planning. Yet, this is what we have done for years in providing public health services. In the proposal now before you we are requesting \$15 million to build a planning mechanism aimed at maximizing the return on our \$43 billion annual health investment. I believe this represents a bargain.

MODERNIZATION OF FEDERAL FUNDING

Thus far I have spoken to the provisions of the law which introduce the new concept of comprehensive health planning. Now I would like to discuss the remaining provisions of the law which modernize the Federal funding provisions for programs planned by the States, localities, and nongovernmental bodies.

STATE AND LOCAL IDENTIFICATION OF HEALTH PROBLEMS

Section 314, in (d) and (e), continues Federal grants for the direct support of health services and their improvement. Previously, the Federal Government identified the categories of activity which were considered urgent. If a State determined that the needs of its population made it more important and desirable to concentrate on a problem other than the category identified in the national program, the State health agency had no sure way of using Federal funds for its own most urgent priorities.

Under these sections, each State will be able to use its health services money to strike hard at specific problems where the need is greatest and success most attainable.

Senator HILL. One State might have one problem that is much more urgent than another State's.

Dr. GUTHRIE. Right.

Project grant funds are pooled to broaden their availability for innovation and demonstration across wide problem fronts—such as urban and rural health services; or against specific target areas—such as narcotics addiction.

ACCOMPLISHMENTS SUBSEQUENT TO LEGISLATIVE ENACTMENT

I would like to report now on what the Public Health Service has been doing with the leadtime given us by passage of Public Law 89-749 last November.

OFFICE ESTABLISHMENT

Shortly after the President signed the act, the Surgeon General established within his immediate office the Office of Comprehensive Health Planning and Development. We have brought together in this office a select group of individuals to develop our implementation plans. We have been conferring with representatives of other Federal agencies

and with officials, including the Public Health Service regional health directors, to encourage and assist in the development of coordinated planning efforts by the States.

CONSULTATIONS WITH STATE AND LOCAL GOVERNMENTS

We have been consulting with representatives of State, county, and local governments; with university officials; with representatives of professional organizations such as the American Medical Association, the Association of American Medical Colleges, the American Hospital Association, the American Public Health Association, the American Institute of Planners, and with many voluntary organizations which have a longstanding interest and involvement in health affairs. These include the American Heart Association, the American Cancer Society, the National Tuberculosis Association, and many others. These meetings have done much to shape our initial thinking and indicate the direction we must take in launching this nationwide program.

Early in January Secretary Gardner wrote to each of the State Governors and expressed his belief—a belief we fully share—that Public Law 89-749 is one of the most significant health measures passed by the Congress. The Secretary advised each Governor that the Department's regional director and the Public Health Service's regional health director were available to discuss both the purposes and machinery of the act in greater detail.

The response from the States to the Secretary's letter has been most gratifying. For example, the Honorable William L. Guy, Governor of the State of North Dakota and chairman of the National Governor's Conference, wrote to the Governor of each State:

This new health legislation could be a milestone in our continuing progress toward improved Federal State relations.

We are greatly encouraged by the interest and enthusiasm which the States are demonstrating.

PLACEMENT OF PROGRAM KEY SEGMENT MANAGERMENTS

Within the brief period since this new law was passed, and within the limits of resources thus far available, we have been reshaping a major part of our operating structure in order to place the management of key segments of this program closer to the communities where the people and their needs exist. The nine Public Health Service regional offices are making ready to receive grant applications, arrange for and supervise review, and make the actual grant awards. This is an important change in management.

One advantage is that the States will have a single point of access to information on Federal funds and programs. Formerly, they had to direct their applications to as many as 15 different offices in Washington, a procedure which often led to confusion, inappropriate competition, and lack of coordination.

REGIONAL COMPREHENSIVE HEALTH ADVISORY COMMITTEES

We are creating in each of the nine regions a Comprehensive Health Advisory Committee to advise the regional health director on health matters relating to his region and to assist him in the grant review process. The advisory committees will include members from hospitals,

industry, universities, private practice, voluntary groups, and other areas of public health. This committee system, in addition to serving a vital purpose in support of the regional health directors, can bring outstanding, nongovernmental talent into the grant review process and thus serve the partnership concept which we seek to strengthen.

SHARING OF INFORMATION, TECHNIQUES AND IDEAS BY STATES

Gentlemen, we do not expect that the States will use identical planning methods or that they will schedule their activities in a uniform manner, nor would this be desirable. We anticipate, however, that there will be a continuous sharing of information, on techniques and ideas developed in the different States, through a variety of channels. A most important channel which we intend to keep strong and viable is the close working relation between regional health directors and the Office of the Surgeon General. This is essential to the mutual progress of programs in the States and in the Federal Government.

These are some of the possibilities that I see ahead. Now we are ready to propose the financial support we feel is essential and realistic to make this program operative. For these purposes, we are requesting an appropriation of \$143,628,000 for fiscal year 1968, an increase of \$20,071,000 and 40 positions over the 1967 level.

Mr. Chairman, I will be happy to answer any questions.

HEALTH ARMY CREATION AND TRANSFER OF DECISION-MAKING

Senator HILL. The programs as valuable as they are, as great as they have been, they sort of grew up like topsy, through the years, haven't they?

Dr. GUTHRIE. Yes, they have to a great extent.

Senator HILL. What you are doing now is to try to marshal them into one whole health army, so to speak; is that right?

Dr. GUTHRIE. Yes, sir.

Senator HILL. That was, I think, the intent of the basic legislation when we had our hearings on it last year before the legislative committee.

Dr. GUTHRIE. Plus, in addition to that marshaling and bringing together, I think placing the decision-making at the State and local level was another important part of the legislation.

Senator HILL. Yes.

BUDGET BUREAU REDUCTION AND EFFECT

I notice the Budget Bureau cut you \$1,273,000. What would be the effect of that?

Dr. GUTHRIE. That cut, Senator Hill, was made in our review and approval moneys and in the program direction and technical assistance. This will eliminate 38 positions from our original staffing proposal and it will reduce the amount of funds available for the travel of consultants and review committees.

The positions that will be eliminated will cut down on our training unit that had been proposed; it will take certain personnel away from the regional office staffing that is necessary to provide the review mechanism and consultation to the States, and certain positions from our headquarters unit here in Washington.

Senator HILL. What percent of your personnel would the 38 places be?

Dr. GUTHRIE. Our total staffing proposed for 1968 in the budget before you is 244 positions. It would have been 282 positions.

Senator HILL. But the budget estimate will allow you 244; is this right?

Dr. GUTHRIE. Yes, sir.

Senator HILL. How serious do you feel this reduction is?

Dr. GUTHRIE. Well, I think it is significant from the point of view of wanting to maintain the quality of the grants review and handling process that the Public Health Service has built up over the years. We don't want to lessen that quality of review in our grants. The history that has been made in the review process at the National Institutes of Health and in our other two major operating bureaus is based on quality and we would like to perpetuate the quality. A reduction of these positions will make it a little more difficult for us to maintain that kind of operation.

I think, too, that the intent of the act in moving this process closer to the field is, indeed, an important one.

CONSULTANTS

Senator HILL. You have fewer consultants and they will be able to get around a little less, isn't that right?

Dr. GUTHRIE. That is correct; yes, sir.

Senator HILL. In carrying out the marshaling of these programs; is that right?

Dr. GUTHRIE. Yes, sir.

This is a new development in the regions; as you are aware, we don't review and approve grants in the regions at this point in time. We do not use outside consultants at this point. This is one of the new innovations in management that we will be adding this year.

Senator HILL. So that you will now have that which you have not had in the past?

Dr. GUTHRIE. That is correct; yes, sir.

Senator HILL. Senator Bartlett?

FUNDS ALLOCATION

Senator BARTLETT. Dr. Guthrie, if \$143 million or thereabouts is appropriated, how will it be channeled and for what purpose?

PLANNING GRANTS TO STATES

Dr. GUTHRIE. Senator Bartlett, sections 314 (a), (b), and (c) of the act are dedicated to planning. The 314(a) grant provides a formula grant to be used by the designated State agency to administer the comprehensive health planning machinery.

This appropriation requests a total of \$5 million for this portion of the program.

AREA PLANNING GRANTS

The 314(b) part of the act is for comprehensive areawide planning at the local, country, and metropolitan levels of government. Presently we are doing this kind of planning only for facilities. The act will expand this to be comprehensive health planning.

There is requested a total amount of \$7.5 million for this portion of the act.

DEMONSTRATION AND TRAINING GRANTS

The 314(c) portion of the act makes available a total of \$5 million for demonstration and training grants that will be made to communities as well as to academic institutions to support the training of comprehensive health planning personnel.

GRANTS TO STATE HEALTH DEPARTMENTS AND STATE MENTAL HEALTH AUTHORITIES

Section (d) of the act provides a grant to the State health department and to the State mental health authority.

STATE MATCHING OF FUNDS

The total we are requesting in 1968 is for the full amount of the authorization, \$62.5 million. The Federal share in each State ranges from approximately 33 percent to 66 percent, based upon population and economic status of the States. It works out to about a 50-percent matching requirement for the country overall.

Senator BARTLETT. I was delinquent. I should have tried to include area in the formula.

Dr. GUTHRIE. Fifteen percent of this section D formula grant will be required for the support of mental health in each State.

PROJECT GRANTS

The last portion of the act, section (e), provides a project grant fund and we are asking for the full amount of the authorization there, which is \$62.5 million. This will be allocated on an individual project grant basis, much as we do project grants at this time.

Senator BARTLETT. This will be for construction also?

Dr. GUTHRIE. No, sir; no construction.

Senator BARTLETT. No construction?

Dr. GUTHRIE. No, sir. And that is the total of the appropriation.

Senator BARTLETT. Thank you. That is all, Mr. Chairman.

Senator HILL. All right; thank you very much, Doctor.

OFFICE OF THE SURGEON GENERAL, SALARIES AND EXPENSES

STATEMENTS OF DR. LEO J. GEHRIG, DEPUTY SURGEON GENERAL;
JOHN H. KELSO, EXECUTIVE OFFICER; DR. WILLIAM H.
STEWART, SURGEON GENERAL; G. R. CLAGUE, ACTING CHIEF
FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSIST-
ANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

OFFICE OF THE SURGEON GENERAL, SALARIES AND EXPENSES

For the divisions and offices of the Office of the Surgeon General and for mis-
cellaneous expenses of the Public Health Service not appropriated for elsewhere,
including preparing information, articles, and publications related to public
health; and conducting studies and demonstrations in public health methods,
【\$7,858,000】 \$9,087,000.

Amounts available for obligation

	1967	1968
Appropriation.....	\$7,858,000	\$9,087,000
Transfer to "Hospitals and medical care".....	-60,000	-----
Comparative transfer from "Communicable disease activities".....	135,000	-----
Comparative transfer to:		
"Health manpower education and utilization".....	-53,000	-----
"National Library of Medicine".....	-62,000	-----
"Comprehensive health planning and services".....	-26,000	-----
"Office of the General Counsel, salaries and expenses".....	-37,000	-----
Total.....	7,755,000	9,087,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
International health activities.....	25	\$266,000	29	\$319,000	+4	+\$53,000
Management and central services:						
Immediate Office of the Surgeon General.....	41	618,800	49	718,800	+8	+100,000
Equal Employment Opportunity.....	(0)	(0)	(2)	(18,000)	(+2)	(+18,000)
Office of Program Planning and Evaluation.....	50	536,200	66	722,800	+16	+186,600
Office of Legislative Affairs.....	8	78,300	14	134,400	+6	+56,100
Office of Extramural Programs.....	18	243,400	20	277,400	+2	+34,000
Office of Administrative Management.....	283	3,425,200	342	4,085,500	+59	+660,300
Office of the Executive Officer.....	(17)	(218,300)	(17)	(217,600)	(0)	(-700)
Division of Buildings and Facilities.....	(51)	(642,000)	(58)	(712,000)	(+7)	(+70,000)
Division of Finance.....	(88)	(1,044,100)	(110)	(1,290,600)	(+22)	(+246,500)
Division of Grants and Contracts.....	(7)	(107,000)	(17)	(201,600)	(+10)	(+94,600)
Compliance review staff.....	(0)	(0)	(7)	(93,000)	(+7)	(+93,000)
Division of Internal Audit.....	(28)	(359,700)	(28)	(390,400)	(0)	(+30,700)
Division of Procurement and Materiel management.....	(83)	(929,000)	(83)	(925,000)	(0)	(-4,000)
Data systems development.....	(0)	(0)	(11)	(101,200)	(+11)	(+101,200)
Management policy staff.....	(9)	(125,100)	(11)	(154,100)	(+2)	(+29,000)
Office of Personnel.....	179	1,872,400	194	2,133,100	+15	+260,700
Office of Information.....	61	681,700	61	696,000		+14,300
Total obligations.....	665	7,722,000	775	9,087,000	+110	+1,365,000
Unobligated balance, reserve.....		33,000				-33,000
Total obligations and balance.....	665	7,755,000	775	9,087,000	+110	+1,332,000

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	665	775	+110
Full-time equivalent of all other positions.....	7	7	
Average number of all employees.....	585	677	+92
Personnel compensation:			
Permanent positions.....	\$6,090,500	\$7,146,900	+\$1,056,400
Positions other than permanent.....	45,900	49,400	+3,500
Other personnel compensation.....	4,200	4,200	
Total personnel compensation.....	6,140,600	7,200,500	+1,059,900
Personnel benefits.....	538,500	599,700	+61,200
Travel and transportation of persons.....	232,400	260,800	+28,400
Transportation of things.....	19,300	26,800	+7,500
Rent, communications, and utilities.....	206,000	239,200	+33,200
Printing and reproduction.....	200,500	242,400	+41,900
Other services.....	35,100	35,600	+500
Services of other agencies.....	241,900	349,900	+108,000
Supplies and materials.....	63,200	68,600	+5,400
Equipment.....	44,500	63,500	+19,000
Total obligations by object.....	7,722,000	9,087,000	+1,365,000

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1685

Summary of changes

1967 enacted appropriation	\$7, 858, 000
Transferred to "Hospitals and medical care"	-60, 000
Comparative transfer from "Communicable disease activities"	135, 000
Comparative transfers to:	
"Health manpower education and utilization"	-53, 000
"National Library of Medicine"	-62, 000
"Comprehensive health planning and services"	-26, 000
"Office of the General Counsel, salaries and expenses"	-37, 000
Unobligated balance—reserve	-33, 000
1967 total estimated obligations	7, 722, 000
1968 estimated obligations	9, 087, 000
Total change	+1, 365, 000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built-in:				
1. Annualization of 34 new positions authorized in 1967				\$35, 100
2. Payments to Civil Service Board of Examiners				93, 000
B. Program:				
1. International health activities	25	\$266, 000	4	51, 000
2. Immediate Office of the Surgeon General	41	618, 800	8	96, 000
Equal Employment Opportunity	(0)	(0)	(2)	(18, 000)
3. Office of Program Planning and Evaluation	50	536, 200	16	191, 700
4. Office of Legislative Affairs	8	78, 300	6	56, 100
5. Office of Extramural Programs	18	243, 400	2	34, 000
6. Office of Administrative management	283	3, 425, 200	59	656, 600
Compliance review staff	(0)	(0)	(7)	(93, 000)
7. Office of Personnel	179	1, 872, 400	15	169, 700
8. Office of Information	61	681, 700		16, 300
Total program increases			110	1, 271, 400
DECREASES				
A. Nonrecurring items:				
1. 1 less day of pay (261 days in 1967; 260 in 1968)				-16, 500
2. Rental of office space				-11, 000
3. Equipment purchases				-7, 000
Total decreases				-34, 500
Total net changes requested			+110	+1, 365, 000

EXPLANATION OF CHANGES

International health activities.—An increase of four positions and \$51,000 is requested to augment the multilateral program staff in the area of surveillance auditing and evaluation of world health programs from documents received from International Organizations. The additional positions are needed as a result of workload generated by the increased involvement and participation of the Department of Health, Education, and Welfare and Public Health Service in International Programs and Activities.

Immediate Office of the Surgeon General.—An increase of 6 positions and \$78,000 is requested to provide the Surgeon General with high-level advisory staff with broad capabilities in such areas as issues and questions of National Policy on total health problems; application of modern communications and computer technology to delivery of health service, health problems related to children, and coordination of health programs at Federal, State and Local levels. An additional increase of 2 positions and \$18,000 is requested to establish a staff on Equal Employment Opportunity.

Office of Program Planning and Evaluation.—An increase of 16 positions and \$191,700 is requested for the development and operation of a service-wide

Planning-Programming-Budgeting System. Specifically, this staff will be engaged in the development of in-depth system analysis-operations research studies designed to begin developing cost benefit criteria, such as in the areas of cost of quality medical care and the application of computer techniques to health activities, and to evaluate operations of special interest for performance and conformity with approved program plans.

Office of Legislative Affairs.—An increase of 6 positions and \$56,100 is requested to augment the present staff and provide additional legislative competence to the Surgeon General in order to keep abreast of Congressional developments and the growing governmental interest in health affairs.

Office of Extramural Programs.—An increase of 2 positions and \$34,000 is requested to provide assistance in development of overall policies and operating guidelines in the expanding extramural support programs.

Office of Administrative Management.—An increase of 59 positions and \$656,600 is requested to provide the service-wide management competence envisioned under the reorganization of the Public Health Service in the following areas:

Division of Buildings and Facilities—7 positions; \$70,000.

Division of Finance—22 positions; \$236,500.

Division of Grants and Contracts—17 positions; \$187,600.

(Compliance Review Staff—7 positions; \$93,000).

Division of Internal Audit—\$31,700.

Data Systems Development—11 positions; \$101,200.

Management Policy Staff—2 positions; \$29,600.

Office of Personnel.—An increase of 15 positions and \$169,700 is requested to augment the current staff in the areas of (1) recruitment; (2) career development; (3) policy development; and (4) systems development.

Office of Information.—An increase of \$16,300 is requested for printing and reproduction resulting from the increased requests from the health professions and the public for information materials prepared within the Public Health Service.

OFFICE OF THE SURGEON GENERAL, SALARIES AND EXPENSES

INTRODUCTION

This appropriation provides essential resources for the Surgeon General to carry out effectively his management and program direction responsibilities. His office is responsible for providing over-all administration, management and direction of programs and projects of the Service. It is organized for three principal purposes: (1) To prescribe policies for the conduct of the affairs of the Public Health Service and to interpret for application within the Service policies of the Office of the Secretary of Health, Education, and Welfare, the General Accounting Office, the Bureau of the Budget, the General Services Administration, the Civil Service Commission, and other government agencies having policy making powers; (2) To furnish staff services as bases for decisions; and (3) To furnish services to the headquarters and field offices. The budget is presented under two activities, "International Health Activities," and "Management and Central Services."

International health activities

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	25	\$248,500	29	\$295,400	+4	+\$46,900
Other expenses.....		17,500		23,600		+6,100
Total, international health activities.....	25	266,000	29	319,000	+4	+53,000

The Office of International Health serves as principal advisor to the Surgeon General on international health matters, and is responsible for overseeing all phases of PHS activities in the international field. These responsibilities include development of policies covering all PHS relationships in international matters; direct staff assistance to the Surgeon General and to the heads of PHS Bureaus;

developing and recommending United States and Service policy positions for health and related fields; and providing current information on health needs and conditions in foreign countries. The Office is also responsible for maintaining PHS relationships with multilateral and bilateral health agencies and serves as the liaison for the PHS with these health agencies and international organizations.

The United States contributes over \$30,000,000 yearly to health programs of international organizations. In 1967, the U.S. contribution to the World Health Organization will be approximately \$15,000,000 and to the Pan American Health Organization approximately \$5,750,000.

With the large amount of U.S. dollars being spent on international health activities, it is imperative that constant supervision be maintained in order to assure that the United States investment is used to the best advantage.

The U.S. members on the Executive Board of World Health Organization and the Pan American Health Organization Executive Committee are officials of the Office of International Health. It is the responsibility of the Multilateral Program Staff to provide the information on which U.S. positions and decisions on projects are made.

Much of the information needed to arrive at these decisions is available through review and analysis of documents received from international organizations. It is proposed that a Program analyst and a Director grade medical officer be added to the staff of the Office of International Health for surveillance auditing and evaluation of health programs for use of the U.S. members of the Board and Committee as well as the delegation of the World Health Assembly.

The President in his International Education and Health message charged the Department of Health, Education, and Welfare with a broad authority to help strengthen our country's capacity to rid mankind of the slavery of ignorance and the scourge of disease, and directed government agencies to improve and enlarge programs already authorized by Congress.

Staff assistance required by the Surgeon General in relation to expanding DHEW and Public Health Service participation in international health programs and activities will be provided by the Office of International Health. The increasing involvement of the United States in these programs and activities requires the development of a competent staff to: (1) obtain adequate knowledge of health and manpower needs in the world; (2) advise on the development of plans and programs to meet these needs; (3) procure personnel; and (4) apply newer management technology, including cost-analysis of international health programs, to evaluate productivity of U.S. participation. The addition of one Director grade officer and a Public health advisor is requested to carry out these functions.

The requested increase is summarized as follows:

Title	Grade	Number	Per annum salary
Communication specialist.....	GS-13	1	\$12, 873
Public health adviser.....	GS-12	1	10, 927
Director grade.....	CO	2	28, 010
Total.....		4	51, 810
Deduct lapses.....			-7, 610
Personnel compensation for new positions.....			44, 200
Personnel benefits.....			700
Annualization of positions new in 1967.....			2, 000
Contractual services.....			500
Other increases relating to new positions:			
Travel.....			500
Transportation of things.....			1, 500
Rental of office space.....			1, 500
Printing and reproduction.....			600
Supplies and materials.....			500
Equipment.....			1, 000
Total.....			53, 000

MANAGEMENT AND CENTRAL SERVICES

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits:						
Immediate office of the Surgeon General	41	\$528,500	49	\$627,100	+8	+\$98,600
Office of program planning and evaluation	50	464,700	66	628,100	+16	+163,400
Office of legislative affairs	8	75,600	14	131,700	+6	+56,100
Office of extramural programs	18	208,000	20	242,000	+2	+34,000
Office of administrative management	283	2,958,600	342	3,550,000	+59	+591,400
Office of personnel	179	1,658,000	194	1,790,700	+15	+132,700
Office of information	61	537,200	61	535,200		-2,000
Total personnel compensation and benefits	640	6,430,600	746	7,504,800	+106	+1,074,200
Other expenses		1,025,400		1,263,200		+237,800
Total, management and central services	640	7,456,000	746	8,768,000	+106	+1,312,000

Immediate Office of the Surgeon General

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits	41	\$528,500	49	\$627,100	+8	+\$98,600
Other expenses		90,300		91,700		+1,400
Total	41	618,800	49	718,800	+8	+100,000

The Surgeon General and his immediate staff give direction, leadership and coordination to the activities of the Public Health Service and are responsible for the effective guidance and management of the Service.

The President has designated the Surgeon General as the National Health Officer and has charged with the overall responsibility for the Nation's health.

The recent study of the organization of the Office of the Surgeon General recommended, as one of the most pressing needs, additional advisory support to the Surgeon General.

An increase of eight positions (four GS-15's and four GS-7's) is requested to provide the Surgeon General with new high-level advisory resources as well as a new problem solving resource in such areas as issues and questions of national policy on total health problems, applications of modern communications and computer technology to delivery of health service, health problems related to children, and coordination of health programs at Federal, State, and local levels. Two of the positions are requested for the establishment of a staff on Equal Employment Opportunity. The incumbents will act as general staff advisors to the Surgeon General in the solution of daily problems, the evaluation of Bureau proposals and requests. They will also provide advice to the Surgeon General on his responsibilities in overall facets of the national health efforts.

A summary of the requested increase follows:

Title	Grade	Number	Per annum salary
Administrative staff assistant	GS-15	4	\$70,200
Secretary	GS-7	4	25,804
Total		8	96,004
Lapses			-9,004
Total			87,000

Total personnel compensation, new position-----	\$87, 000
Annualization of positions new in 1967-----	8, 200
Personnel benefits-----	4, 000
Equipment related to new positions-----	1, 400
Nonrecurring items of expense: 1 less day of pay (261 days in 1967 ; 260 in 1968) -	- 600
Net increase requested-----	100, 000

Office of Program Planning and Evaluation

	1967 estimate		1968 estimate		Increase or decrease	
	Posi-tions	Amount	Posi-tions	Amount	Posi-tions	Amount
Personnel compensation and benefits-----	50	\$464, 700	66	\$628, 100	+16	+\$163, 400
Other expenses-----		71, 500		94, 700		+23, 200
Total-----	50	536, 200	66	722, 800	+16	+186, 600

In performing its mission of providing the Surgeon General and his principal assistants with program staff services relative to long range planning, evaluation, and health policy formulation within the framework of a changed and strengthened Office of the Surgeon General, the Office of Program Planning and Evaluation faces important new and expanded responsibilities during the next year, including the development and operation of a Service-wide Planning-Programming-Budgeting System and the development of in-depth system analysis-operations research studies. If these responsibilities are effectively and expeditiously met, the Surgeon General should be able to better manage the large and complex programs of the Public Health Service and maximize their impact on the health needs and conditions of the Nation.

One of the most immediate and important challenges confronting the Surgeon General is to set up and operate a comprehensive Planning-Programming-Budgeting System which will meet the needs and requirements of the Department and the Budget Bureau, as well as the Public Health Service. The Office of Program Planning and Evaluation, working closely with the Division of Finance will have the responsibility for coordinating the total PPB effort for the Service. This responsibility will mean developing and communicating planning policies, procedures, and assumptions to the Bureaus and reviewing program plans submitted by the Bureaus for consistency with planning guidelines and practicality. The Office will undertake and direct studies leading to program memoranda covering possible alternative methods of approach in order to recommend to the Surgeon General long range plans which will result in the most effective allocation of the Service's resources to meet the Nation's health needs.

The conduct of in-depth system analysis-operations research studies to facilitate and enhance planning and programming will be a necessary in-put and follow up to the consideration of program plans. These studies will be designed to begin developing cost benefit criteria, such as in the areas of cost and quality medical care and the application of computer techniques to health activities, and to evaluate operations of special interest to the Surgeon General for performance and conformity to the approved plans.

To plan and evaluate intelligently, it is crucial to know what activities are taking place in health or health related programs in other Federal, State and local agencies. In 1968 it is proposed to step up efforts to develop more effective policy and planning liaison and coordination with other Federal agencies particularly with those of the Department of Health, Education, and Welfare, Office of Economic Opportunity, and Department of Housing and Urban Development that are increasingly moving into the health field.

It is also necessary to expand the Surgeon General's capability to establish Service-wide and national health policies, particularly to formulate long range goals and objectives and develop position papers and program memoranda, on such controversial subjects as infant mortality, alternative uses of health facilities, human experimentation, and artificial organs. This effort will be closely related to and dependent upon the information developed through PPB, Systems Analysis-Operation Research, and liaison with health or health related agencies.

A summary of the requested increase follows:

Title	Grade	Number	Per annum salary
Public health specialist	GS-15	2	\$35,100
Program analysis officer	GS-14	1	15,106
Program systems analyst	GS-14	1	15,106
Public health analyst	GS-14	2	30,212
Mathematician	GS-13	1	12,873
Operations research analyst	GS-12	1	10,927
Economist	GS-11	1	9,221
Operations research analyst	GS-9	1	7,696
Public health analyst	GS-7	1	6,451
Secretary	GS-5	1	5,331
Clerk-typist	GS-5	1	5,331
Do	GS-4	1	4,776
Clerk-stenographer	GS-4	2	9,552
Total		16	167,682
Lapse			-16,882
Personnel compensation for new positions			150,800
Annualization of positions new in 1967			5,500
1 less day of pay (261 days in 1967; 260 in 1968)			-1,100
Personnel benefits			5,200
Total personnel compensation and benefits			163,400
Other objects related to new positions:			
Travel			5,000
Rental of office space and communications			5,500
Printing and reproduction			3,000
Services of other agencies			12,000
Supplies and materials			1,000
Equipment			6,200
Subtotal			32,700
Less nonrecurring costs:			
Rental of office space			-5,500
Equipment			-4,000
Total, other objects			23,200
Net increase requested			186,600

Office of Legislative Affairs

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	8	\$75,600	14	\$131,700	+6	+\$56,100
Other expenses		2,700		2,700		
Total	8	78,300	14	134,400	+6	+\$56,100

The Office of Legislative Affairs is responsible for:

1. Legislative analysis and development through reports on pending bills, development of legislative program, and technical assistance to Members of Congress on bills; legislative program support through preparation of testimony, back-up material for hearings, assistance on preparation of Congressional committee reports; Congressional services and liaison through preparation of general or special program information; Congressional inquiry service, including significant Congressional mail; legislative reference center; and making selected analyses of State health legislative developments.

2. Review of Service regulations to be published in the Federal Register. The area of handling legislative affairs is one of vital concern. It is of special importance to the Public Health Service because of the Federal Government's growing interest and involvement in health affairs—and as the National Health Officer the Surgeon General must have a comprehensive picture of all health legislation throughout the Nation.

We are requesting 6 additional positions and \$56,100 to supplement the present staff of 8 positions. This additional staff would provide a single repository of legislative competence and would perform comprehensive reviews of nondepartmental legislative proposals.

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A summary of the requested increase follows :

Title	Grade	Number	Per annum salary
Legislative liaison officer.....	GS-15	1	\$17,550
Legislative analyst.....	GS-13	1	12,873
Reports review officer.....	GS-12	1	10,927
Legislative analyst.....	GS-11	1	9,221
Do.....	GS-9	1	7,696
Secretary.....	GS-5	1	5,331
Total.....		6	63,598
Less lapses.....			-11,498
Total personnel compensation.....			52,100
Personnel benefits.....			4,000
Total increase requested.....			56,100

Office of Extramural Programs

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	18	\$208,000	20	\$242,000	+2	+ \$34,000
Other expenses.....		35,400		35,400		
Total.....	18	243,400	20	277,400	+2	+ \$34,000

The distribution of authority within the Public Health Service for extramural grant awards to five Bureaus and the National Library of Medicine with the consequent need for strengthened continuing leadership in the development of overall policies and operating guidelines, requires the establishment of a focus of responsibility in the Office of the Surgeon General, i.e., in the Office of Extramural Programs.

The Office will provide centralized guidance for Extramural Program policy and for referral and review of all proposals for support, determining the manner in which, and the standards by which, such proposals are evaluated. Staff for this Division must be sufficient in number to handle the large variety of types of programs and highly trained and experienced to cover the breadth of the subject matter. This staff must establish review parameters and physically audit an ongoing review mechanism of approximately 250 committees.

In order to carry out the added responsibilities of this office, we are requesting 2 additional positions and \$18,000 and an additional \$16,000 to more fully utilize positions already available. A summary of the requested increase follows :

Title	Grade	Number	Per annum salary
Grants specialist.....	GS-15	1	\$17,550
Secretary.....	GS-7	1	6,451
Total.....		2	24,001
Less lapses.....			-7,601
Personnel compensation, new positions.....			16,400
Personnel benefits.....			1,600
Increased employment in positions authorized for 1967.....			16,000
Total increase requested.....			34,000

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Office of Administrative Management

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits	283	\$2,958,600	342	\$3,550,000	+59	+\$591,400
Other expenses		466,600		535,500		+68,900
Total	283	3,425,200	342	4,085,500	+59	+660,300

The Office of Administrative Management organization concept was established under the reorganization of the Public Health Service. This office brings together the following Servicewide management support groups:

Office of the Executive Officer
 Division of Buildings and Facilities
 Division of Finance
 Division of Grants and Contracts
 Division of Internal Audit
 Division of Procurement and Material Management
 Data Systems Development Staff
 Management Policy Staff

A discussion of each of the division's functional responsibilities and funding requirements for 1968 follows:

Office of the Executive Officer

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Total	17	\$218,300	17	\$217,600		-\$700

The Executive Officer serves as the principal advisor on management at the Service level; exercising technical guidance, leadership and review of activities throughout the Service in these functional areas.

No increases are requested for this Office.

Division of Buildings and Facilities

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Total	51	\$642,000	58	\$712,000	+7	+\$70,000

The Division of Buildings and Facilities is responsible for: (1) Developing long-range plans for acquisition of facilities, and appraising needs and recommending priorities for construction; (2) Reviewing proposals and coordinating activities with the Office of the Secretary, General Services Administration, Bureau of the Budget, and the Bureau of Indian Affairs; (3) Assisting program officials, except for NIH, in determining requirements for proposed construction, developing construction proposals, providing guidance to architects and engineers in all phases of the design work, and generally supervising, expediting, and inspecting new construction and major modifications of existing facilities; and (4) Establishing Service-wide real property construction, leasing, repair, and management policies and procedures.

Seven additional positions (5 professionals and 2 secretaries) have been requested to keep pace with expanding activities of the Service. One professional

position is needed to provide additional support in each of: (1) planning of design and construction; (2) developing written guides and procedures for maintenance and repair; (3) acquisition of unimproved real estate for new facilities and leasing of space; and (4) two professional positions are required in the area of design and layout of research laboratories and hospitals in order to meet the requirements of constant advances in health and medicare fields. Two secretaries will be required for additional staff support.

Division of Finance

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total.....	88	\$1,044,100	110	\$1,290,600	+22	+\$246,500

The Division of Finance provides leadership for the improvement of Service programming and financial management activities. To this end, it develops policies and instructions for budget preparation and presentation; participates actively in programming activities of the Office of Planning and Evaluation associated with the planning-programming-budgeting system; directs allocation of funds and manages a system of budgetary controls; directs planning and implementation of fiscal systems and procedures and provides accounting services; develops policies and procedures concerning the financial aspects of negotiated research and development contracts and furnishes financial advice to contracting officers.

The Division of Finance has made extensive efforts over the past five years to eliminate or reduce low priority work through increased automation and improved procedures. It has sought to broaden the scope of professional financial services to levels adequate to meet the financial problems involved in maintaining efficient management of public funds authorized for national and international health programs growing in both size and number. In the period during which these improvements have been sought, the Service has more than doubled in size, with half of this increase occurring over the past two years.

While substantial progress has been made in strengthening overall financial management it has been impossible with available manpower resources to deal with the problems of rapid program growth and at the same time implement fully the recommendations of the Joint Financial Management Improvement Committee concerning implementation of planning-programming-budgeting and increased automation of financial reports providing cost data on a functional basis. The increases proposed for 1968 would be used primarily to intensify efforts in support of these goals and to achieve the financial objectives outlined in the President's memorandum to heads of departments and agencies on May 24, 1966, on the use of cost-based budgets, and improvement of accounting systems in conformance with the principles and standards prescribed by the Comptroller General. The specific purposes for which additional personnel would be used are outlined below:

1. Twelve positions are needed to handle increased workload in budget administration, reporting, and planning-programming-budgeting.

Budget formulation and administration.—Four professional staff (2 GS-14, 13, 11) and a secretary (GS-5) are needed to provide adequate staff for Service budget formulation activities. These include development and interpretation of budget instructions as they apply to varying program circumstances, correlation of justifications and hearing materials, analysis of plans and data, analysis of policy implications of proposals, evaluation of the reasonableness of resources requested and of compliance with stated policies of the Surgeon General. The growth of Service activities to meet national health needs, coupled with the broad scope of analyst responsibilities has culminated in workload levels far beyond the capacity of the present budget formulation staff. Overload is compounded by the increasing year-around nature of budgetary planning arising from continual detailed adjustments planned and executed during the year as progress is made toward broad program goals. These activities have for some time exceeded the capacities of existing formulation staff, particularly as calls for special data analysis have increased, and implementation of planning-program-

ming-budgeting proceeded. The requested increase will provide for additional leadership in planning and executing budget formulation and related activities.

Budget reports.—Three analysts (GS-14, 13, 11) and a secretary (GS-5) are needed to handle full-time workload which has developed for the production of special reports. These originate from the White House, the Congress, Bureau of the Budget, other agencies and executive staff of HEW and PHS. Material requested covers planned agency operations in selected geographic and program areas, measures of progress in specified activities and accumulation and analysis of comparative program data within agency programs and on an interagency basis. This staff will receive requests, identify data sources and data accumulating procedures, and analyze information produced for completeness and responsiveness. It will provide the coordinating point between the Bureau of the Budget and the HEW Comptroller and the budget formulation staff for the compilation of materials for Congressional hearings, will provide independent review of consolidated budget justifications and will review and annotate transcripts of hearings. As the central point through which Service budget information flows, it establishes and maintains official budget files of PHS.

Planning-programming-budgeting.—Two analysts (GS-14, 12), and a secretary (GS-5) are needed to carry out new duties associated with the program planning and budgeting system. This staff will monitor and assist development and analysis of all financial data used in the system. It will evaluate the impact of long range plans on cost and resource requirements, and consult with Service management on the feasibility of five-year projections. It will incorporate into the five-year plan financial and resource changes resulting from Presidential, Congressional and Bureau of the Budget decisions.

2. Four positions (Three accountants 1 GS-13, 1 GS-12, 1 GS-11 and a Secretary GS-5) are needed to handle the increasing workload related to providing contracting offices with information on the fiscal and accounting adequacy of negotiated research and development contracts and to provide uniform cost principals and cost advisory services to managers. The number of PHS negotiated research and development contracts is increasing by more than 20 percent annually, with about 975 cost type research and development contracts expected to be in force in 1968. Each additional contract multiplies workload, as a number of proposals are reviewed for each contract let. The number of contractor accounting surveys increases, additional audit reports must be reviewed, and more problems arise requiring financial review and decision during contract performance. In addition to meeting these contingencies, additional staff is needed to develop uniform Service cost principles assuring that equal financial treatment and interpretations are provided contractors by PHS contracting offices.

3. Three positions are needed in connection with PHS central accounting and financial reporting. Three accountants (GS-12, 2 GS-11) are urgently needed to provide additional PHS accounting services required by the expansion of activities funded in foreign currencies generated under P.L. 480, and related to deposits of Commissioned Officers savings under P.L. 89-538. The positions are needed not only because of workload increases in these specific areas, but because overall growth of accounting and reporting activities have more than absorbed existing staff resources in review and reconciliation of PHS accounts, compilation of reporting data to BOB, GAO and Treasury Department and coordination of fiscal data and reports of the 34 PHS accounting points.

4. Three positions are needed to provide urgent improvements in the PHS accounting system. Two systems accountants (2 GS-12), and a secretary (GS-5) are needed to direct wholesale updating and revision of accounting and related instructions for Service administrative and financial staffs, and to begin overall recoding of PHS accounts to conform to the HEW uniform coding system. The development of automated accounting over the past several years has required the full time of the Division's accounting systems personnel in systems design and revisions, training of Service financial personnel in procedures for operation of the automated system and review of actions for compliance with these procedures. Additionally, present staff are engaged in a full-scale study of PHS overall accounting toward development of increased responsiveness in the provision of data for management as Service programs accelerate in growth and numbers. As a result, financial directives have become largely outdated and require early updating in both current procedures to be followed, as well as in connection with systems redesign as the results of the current survey emerge.

Division of Grants and Contracts

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total.....	7	\$107,000	24	\$294,600	+17	+\$187,600

The Division of Grants and Contracts provides management advice on, and conducts internal studies of grants and research and development contract activities throughout the Service to improve the effectiveness and efficiency of their administration. It also develops procedures governing the use of negotiated contracts for research and development activity and provides assistance to grantees and contractors needed to assure implementation of adequate administrative procedures in the execution of Public Health Service grants and contracts.

The Division is new and is designed to play a vital role in establishing an improved system for resolving questions on audits in the area of grants and contracts and reviewing institutional cost sharing arrangements. Ten positions are being requested for this purpose.

The proposed budget also provides for a staff of seven positions in the area of Compliance Review. The staff will include a Chief, two Staff Assistants, two Compliance Review Officers, and two Secretaries. The staff will conduct complaint investigations and special reviews of contractors' facilities to insure compliance with the objectives of Executive Orders 10925 and 11114 and the rules and regulations of the President's Committee on Equal Employment Opportunity.

Routine compliance reviews will be made of those organizations in which it is determined that the Public Health Service is the "Primary Interest Agency." It is estimated that this category will consist of approximately 250 contractors and 1800 construction grantees. By confining review efforts to those contractors and sub-contractors obligated to file compliance reports, SF-40 and SF-41, it is estimated that complete coverage will be on a biennial basis.

Division of Internal Audit

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total.....	28	\$359,700	28	\$390,400	-----	+\$30,700

This Division is responsible for the conduct of internal audit reviews of Service operations. It must ascertain the degree of compliance with laws, regulations and directives, including adequacy of efforts to meet established PHS objectives, examine and evaluate management operations and Service accounting, financial and statistical data systems, and ascertain whether assets are properly safeguarded and accounted for. Other assigned responsibilities include direction of the investigative and security activities of the Service and related staff services and review of Service activities in connection with allegations of misconduct and possible violations of Federal statutes by Service personnel.

Additional funds are requested to more fully utilize positions already authorized.

Division of Procurement and Materiel Management

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total.....	83	\$929,000	83	\$925,000	-----	-\$4,000

This Division provides leadership for the procurement and materiel management programs of the Service in the areas of procurement, supply, forms, records and printing management and issuances, and provides technical assistance in these areas to all components of the Service. It is responsible for the issuance of all policies required to implement Federal and HEW Procurement and Property Management Regulations. A further responsibility requires formulation of Service-wide plans and policies applicable to the acquisition and utilization of automatic data processing equipment. Staff in 1968 will be maintained at 1967 level.

Data systems development

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total.....			11	\$101, 200	+11	+\$101, 200

The Data Systems Development Staff is a new organizational entity established to develop, operate, and maintain a management and program information system to serve the needs of the Office of the Surgeon General. At the present time the answer to a simple question as to what the Public Health Service is doing in a particular field can be obtained only by means of a direct inquiry to each program involved. This system of data collection is time consuming and costly. The most important consideration, however, is the fact that data gathered in this manner cannot meet the total needs of the Office of the Surgeon General. Additionally, such data is difficult to manipulate for further analytical purposes.

In order to achieve the necessary timeliness and accuracy of communication and interchange of information, the Office of the Surgeon General must develop a coordinated information system. The development and management of such a system is a function which requires central planning and direction. This staff office will provide leadership, planning and direction for implementation of the system. Existing systems in functional areas such as personnel, fiscal, supply, and grants management will be analyzed and modifications made to ensure that they are compatible within the total coordinated Public Health Service system. Implementation of an information system should enable the Service to achieve greater efficiency and economy of operations in data management.

Eleven positions are recommended to support these new activities.

Management Policy Staff

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total.....	9	\$125, 100	11	\$154, 100	+2	+\$29, 000

The Management Policy Staff provides management analyses needed to improve the Service's organization and management policies; conducts organizational studies and surveys; prepares and reviews proposals and issuances affecting organizational structure or function that require the approval of the Surgeon General or higher authority; initiates or reviews proposals for establishing or modifying PHS management policies or regulations; prepares staff papers on current management problems; negotiates solutions to inter-agency, inter-bureau, and inter-office problems of organization, function, policy, procedure, or coordination; and advises and assists Service staff and operating offices and provides general staff support for major study groups and task forces established by the Surgeon General.

One additional GS-15 and 1 secretarial position is requested to provide more staff resources to cope with the constantly growing work load in the area of organizational analysis brought about by new and expanding programs.

A summary of the increase requested for the Office of Administrative Management follows:

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New positions requested, fiscal year 1968

Title	Grade	Number	Per annum salary
Chief of branch.....	GS-15	2	\$35,100
Chief of division.....	GS-15	1	17,550
Management analysis officer.....	GS-15	1	17,550
Administrative officer.....	GS-14	1	15,106
Administrative staff assistant.....	GS-14	2	30,212
Engineer.....	GS-14	1	15,106
Financial operations officer.....	GS-14	3	45,318
Management appraisal officer.....	GS-14	2	30,212
Systems analyst.....	GS-14	4	60,424
Accountant.....	GS-13	1	12,873
Architect.....	GS-13	1	12,873
Budget analyst.....	GS-13	2	25,746
Compliance review officer.....	GS-13	2	25,746
Computer analyst.....	GS-13	2	25,746
Systems analyst.....	GS-13	2	25,746
Accountant.....	GS-12	4	43,708
Budget analyst.....	GS-12	1	10,927
Engineer.....	GS-12	1	10,927
Management analyst.....	GS-12	1	10,927
Accountant.....	GS-11	3	27,663
Budget analyst.....	GS-11	2	18,442
Engineer.....	GS-11	1	9,221
Do.....	GS-9	1	7,696
Secretary.....	GS-7	2	12,902
Secretary (stenography).....	GS-7	1	6,451
Secretary.....	GS-6	3	17,601
Clerk-stenographer.....	GS-5	1	5,331
Secretary.....	GS-5	5	26,655
Secretary (stenography).....	GS-5	4	21,324
Secretary (typist).....	GS-5	1	5,331
Clerk-typist.....	GS-4	1	4,776
Total.....		59	635,190
Deduct lapses.....			-132,190
Net personnel compensation, new positions.....			503,000
Personnel benefits for new positions.....			39,600
Annualization of positions new in 1967.....			20,000
Increased employment in positions authorized in 1967.....			36,600
1 less day of pay (261 days in 1967; 260 in 1968).....			-7,800
Net increase requested for personnel compensation and benefits.....			591,400
Other objects of expense:			
Travel and transportation of persons.....			21,700
Rental of office space and communications for new positions.....			26,700
Printing and reproduction.....			11,500
Services of other agencies.....			1,500
Supplies and materials for new positions.....			3,100
Office equipment for new positions.....			12,900
Nonrecurring items of expense:			
Rental of office space, 1967.....			-5,500
Equipment purchases.....			-3,000
Net increase requested for other objects of expense.....			68,900
Total increase requested.....			660,300

Office of Personnel

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	179	\$1,658,000	194	\$1,790,700	+15	+\$132,700
Other expenses.....		214,400		342,400		+128,000
Total.....	179	1,872,400	194	2,133,100	+15	+260,700

The need for improvement in personnel staff services has been expressed constantly in recent years. The personnel function has been subjected to a series of studies by groups inside and outside the Service. Various forms of leadership and organization have been tried and retried. These efforts have resulted in increased support for personnel services in Bureaus and some field activities. They have resulted in improvement of functioning within the Office of Personnel and Office of the Surgeon General but not to an adequate degree.

The positions requested for 1968 are restricted to the areas of activity where the needs are most pressing. A summary of the present staffing pattern in these areas and the requested increases for 1968 are as follows:

Function	Present staff	Increases	Total
A. Recruitment.....	57	7	64
B. Career development.....	27	2	29
C. Policy development.....	13	2	15
D. Systems development.....	5	4	9
Total.....	102	15	117

A. Recruitment

The scope of recruitment requirements is illustrated by the forecast based on experience with separation rates and on budget increases provided for 1967. For example—annual recruitment will run in the range of 1,000 medical officers; 700 nurses; 700 scientists, engineers, mathematicians, and statisticians; 800 sub-professional aides; 700 artisans; 700 administrative specialists; and 1200 clerical employees; with smaller numbers in other specialties. Directly or indirectly, the Office of Personnel must support recruitment in all of these fields through the following kinds of work:

(1) *Manpower planning*.—Effective recruitment requires advance information on future manpower needs and available personnel. Such information may affect program planning by showing that a proposed plan requires, for example more medical specialists or more pharmacologists than the Nation is turning out. At a minimum it enables a recruiting office to make plans to look in the right places for the people who are most needed. At present, part of the time of one person can be devoted to this work. Crude forecasts like those above can be provided, but more precise indications of needs are unavailable. In 1968, more data will be available, both from the ADP system in the Office of Personnel and from PPB materials. A staff, discussed under the "Manpower planning" heading for "Career Development" below with improved data resources should be able to assist both the Recruitment function and Career Development efforts.

(2) *Recruiting operations (2 new positions)*.—Total Service recruitment is carried on through—(1) local programs at every organizational level to meet recruitment needs of that unit; and (2) national and service-wide programs for critical shortage occupations and those which are used throughout the Service and are not adequately obtained through local recruiting efforts. The Office of Personnel supports local programs by providing recruitment aids and advice, and it directs and performs service wide recruiting.

(3) *Selection, appointment, placement (5 new positions)*.—Recruitment efforts produce volumes of applications for employment in both Commissioned Corps and Civil Service, but the effectiveness of the effort depends on rapid processing of the applications, judicious selection among them, and a workable process for getting the chosen persons cleared, appointed and on the job. The function now occupies 43 people in Office of Personnel and is our largest single element of work. In the current year the volume of applications outgrew our capacity for processing. Our capacity must be increased and improved by making it possible to evaluate applicant potential and suitability for assignment with greater care than we can exercise at present.

To make it possible to carry out these functions and to ascertain that we get the best possible people, an additional 5 positions are required.

B. Career development

The objectives of Career Development are to improve the performance of employees working on health missions of the Public Health Service and to provide the employees with the satisfactions derived from developing their capabilities

and obtaining advancement. Most intensive efforts need to be devoted to the primary professional categories and programs of the Service through the operation of Career Development Committees. A programmed approach to Service requirements is needed.

(1) *Manpower planing (2 new positions).*—Manpower planning is required to determine the outlook for Service needs and the availability of employees who are either qualified for immediate assignment or for development to meet the needs. It is evident that the number of internal placements required each year exceeds even the number required for recruitment. However, here again data on needs and resources are inadequate. For example, it appears that the Service now has over 2,000 employees in leadership positions at Commissioned Officer grades O-6 or GS-14 and above and that turnover at these levels is low. It can be inferred that a demand will develop for the training of health program managers to replace these senior people as they approach retirement in the future. However, more precise definition of needs in this field and in other specialized fields is not available. The improvement in data resources and in staffing for Manpower Planning, as proposed in the section on Recruitment, applies equally to the provision of information required for career development efforts. Two positions—a manpower analyst and a statistical clerk are needed.

C. Policy development (2 new positions)

Under existing directive of the Surgeon General a primary responsibility of the Office of Personnel is the development of policy and procedures to guide the entire Service in the management of personnel. This is a function of a rather technical nature, based partly on laws and regulations and partly on behavioral sciences. In scope, it covers the full range of Public Health Service personnel. The Office of Personnel serves as a Civil Service Commission for the Commissioned Corps and for personnel employed under the various special authorities of PHS for employment of such groups as CO-OP's, Fellow's and Consultants. In addition, the Office of Personnel develops PHS policies respecting all other personnel: their employment, compensation, training, etc.

Two additional positions are requested to cover the workload of policy Development.

D. Systems development (4 new positions)

The application of automation to the Personnel area has two primary goals. The first is the simplification of many routine processing operations, reducing routine clerical tasks while improving service and ameliorating the paralyzing effects of wide fluctuations in workload. The second is the assembly of a comprehensive data base of significant information about the employees and the work that they perform. Some specific examples illustrate the importance of an automated information system to the Service.

(1) *Career development.*—The intelligent conduct of a program of Career Development requires the availability of a considerable volume of data: previous work experience, formal training, evaluations of performance, career aspirations of the individual employee, and Service plans which provide in a logical progression avenues for employees' advancement.

(2) *Policy and procedures.*—The availability of employees data is critical to intelligent policy formation for personnel administration. The Central maintenance of employee information obviates the need for polling other offices for information and eliminates the specific mechanism for their collection.

Four positions are requested to augment the systems development staff.

A summary of 15 new positions requested and the net increase of \$260,700 follows:

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Title	Grade	No of positions	Per annum salary
Digital computer systems analyst.....	GS-13	1	\$12,873
Digital computer systems programmer.....	GS-12	1	10,927
Manpower analyst.....	GS-12	1	10,927
Digital computer systems analyst.....	GS-7	1	6,451
Statistical clerk.....	GS-5	1	5,331
Clerk-typist.....	GS-5	2	10,662
Personnel clerk.....	GS-4	1	4,776
Clerk-typist.....	GS-4	1	4,776
Clerk-typist.....	GS-3	3	12,807
Senior grade.....	C.O.	3	52,150
Total.....		15	131,680
Less lapse.....			-34,680
Total compensation (new positions).....			97,000
Personnel benefits (new positions).....			9,700
Temporary employment.....			3,000
Annualization of positions new in 1967.....			3,000
Increased employment in positions authorized in 1967.....			25,000
1 less day of pay (261 days in 1967; 260 in 1968).....			-5,000
Total net increase, personnel compensation and benefits.....			132,700

Other objects

	Estimate, 1967	Estimate, 1968	Increase or decrease
Travel.....	\$14,000	\$15,200	\$1,200
Transportation of things.....	6,000	12,000	6,000
Rent, communications, and utilities.....	40,000	50,500	10,500
Printing and reproduction.....	35,200	45,700	10,500
Other services.....	17,300	17,800	500
Services of other agencies.....	74,100	168,100	94,000
Supplies and materials.....	19,000	19,800	800
Equipment.....	8,800	13,300	4,500
Total.....	214,400	342,400	128,000

Office of Information

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	61	\$537,200	61	\$535,200	-----	-\$2,000
Other expenses.....		144,500		160,800	-----	+16,300
Total.....	61	681,700	61	696,000	-----	+14,300

The Office of Information functions in two ways: (1) as the principal line of communications between the Service and the health professions; and (2) as coordinator of the public information and publications output of the Service. It provides leadership and direction to this effort, counsels the Surgeon General on his statutory responsibilities for the dissemination of information to the health professions and the public, prepares and distributes pamphlets, radio and television scripts, press releases, and other materials; responds to thousands of mail, telephone and personal inquiries from the professions annually, supervises the production of Public Health Reports, the official journal of the Service, and the news magazine of public health activities distributed to PHS employees and other members of the public health profession. The Office uses all forms of media to communicate Service aims, policies and accomplishments to the health professions and the public.

The continuing expansion of the Service and Department programs in recent years and the growing awareness among members of the Congress, the professions, and the public of the need for greatly improved communication of scien-

tific and technical knowledge is reflected by the more than 180,000 communications from professional groups, voluntary health agencies, members of the Congress, and the public that were received by this Office during 1966.

Public Health Reports, the official professional journal of the Service, has shared in the developing interest in improving the communication of research knowledge to the health professions.

As a result of the continued growth of the Service and in order to serve the increasing demands for health knowledge from the health professions and the public, we are requesting an increase of \$16,300 for printing and reproduction partially offset by non-recurring costs in the amount of \$2,000 for one less day of pay in 1968.

New positions requested, fiscal year 1968

	Grade	Annual salary
International health activities:		
Communications specialist.....	GS-13	\$12,873
Public health adviser.....	GS-12	10,927
Director grade (2).....	CO	28,010
Total (4).....		51,810
Immediate Office of the Surgeon General:		
Administrative staff assistant (4).....	GS-15	70,200
Secretary (4).....	GS-7	25,804
Total (8).....		96,004
Office of Program Planning and Evaluation:		
Public health specialist (2).....	GS-15	35,100
Program analysis officer.....	GS-14	15,106
Program systems analyst.....	GS-14	15,106
Public health analyst (2).....	GS-14	30,212
Mathematician.....	GS-13	12,873
Operations research analyst.....	GS-12	10,927
Economist.....	GS-11	9,221
Operations research analyst.....	GS-9	7,696
Public health analyst.....	GS-7	6,451
Clerk-typist.....	GS-5	5,331
Secretary.....	GS-5	5,331
Clerk-stenographer (2).....	GS-4	9,552
Clerk-typist.....	GS-4	4,776
Total (16).....		167,682
Office of Legislative Affairs:		
Legislative liaison officer.....	GS-15	17,550
Legislative analyst.....	GS-13	12,873
Reports review officer.....	GS-12	10,927
Legislative analyst.....	GS-11	9,221
Do.....	GS-9	7,696
Secretary.....	GS-5	5,331
Total (6).....		63,598
Office of Extramural Programs:		
Grants specialist.....	GS-15	17,550
Secretary.....	GS-7	6,451
Total (2).....		24,001
Office of Administrative Management:		
Chief of branch (2).....	GS-15	35,100
Chief of division.....	GS-15	17,550
Management analysis officer.....	GS-15	17,550
Administrative officer.....	GS-14	15,106
Administrative staff assistant (2).....	GS-14	30,212
Engineer.....	GS-14	15,106
Financial operations officer (3).....	GS-14	45,318
Management appraisal officer (2).....	GS-14	30,212
Systems analyst (4).....	GS-14	60,424
Accountant.....	GS-13	12,873
Architect.....	GS-13	12,873
Budget analyst (2).....	GS-13	25,746
Compliance review officer (2).....	GS-13	25,746
Computer analyst (2).....	GS-13	25,746
Systems analyst (2).....	GS-13	25,746
Accountant (4).....	GS-12	43,708
Budget analyst.....	GS-12	10,927
Engineer.....	GS-12	10,927
Management analyst.....	GS-12	10,927
Accountant (3).....	GS-11	27,663
Budget analyst (2).....	GS-11	18,442

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New positions requested, fiscal year 1968—Continued

	Grade	Annual salary
Office of Administrative Management—Continued		
Engineer.....	GS-11	9,221
Do.....	GS-9	7,696
Secretary (2).....	GS-7	12,902
Secretary (stenography).....	GS-7	6,451
Secretary (3).....	GS-6	17,601
Clerk-stenographer.....	GS-5	5,331
Secretary (5).....	GS-5	26,655
Secretary (stenography) (4).....	GS-5	21,324
Secretary (typist).....	GS-5	5,331
Clerk-typist.....	GS-4	4,776
Total (59).....		635,190
Office of Personnel:		
Digital computer systems analyst.....	GS-13	12,873
Digital computer systems programmer.....	GS-12	10,927
Manpower analyst.....	GS-12	10,927
Digital computer systems analyst.....	GS-7	6,451
Clerk-typist (2).....	GS-5	10,662
Statistical clerk.....	GS-5	5,331
Clerk-typist.....	GS-4	4,776
Personnel clerk.....	GS-4	4,776
Clerk-typist (3).....	GS-3	12,807
Senior grade (3).....	CO	52,150
Total (15).....		131,680
Total, new positions, all activities (110).....		1,169,965

INTRODUCTION OF ASSOCIATES

Seantor HILL. Now, Dr. Gehrig, you will address yourself to a matter you don't consider of much importance, do you, salaries.

Dr. GEHRIG. Yes, sir; salaries and expenses.

Mr. Chairman, I have with me this morning, Mr. John Kelso, the executive officer for the Public Health Service also.

Senator HILL. Glad to have you here, sir.

BUREAU ACTIVITY COORDINATION

Dr. GEHRIG. I am pleased to appear before you to discuss salaries and expenses of the Office of the Surgeon General. This appropriation finances the principal staff offices which seek to coordinate the activities of the five bureaus, the National Library of Medicine, and the National Center for Health Statistics and to establish effective relationships with other agencies whose missions are related to health. It also supports certain functions which can most efficiently be conducted on a centralized basis.

REORGANIZATION PROGRAM REALINEMENT

The Surgeon General and other witnesses have already discussed with you the major reorganization of the Service which has just been put into effect. One of its primary purposes was to realize our programs to generate a more cohesive attack upon each of our major missions. Another principal purpose was to bring the same kind of cohesion to the operations of the Service as a whole.

HUMAN HEALTH IMPROVEMENT

ACTIVITY DIVERSITY

Our activities are extremely diverse. We work with a great variety of partners and serve a variety of clientele. Yet everything we do is directed toward the same ultimate goal, to improve the health of people. Priorities need to be assessed, policies determined, and activities interrelated in the context of this total commitment to health.

The office of the Surgeon General is the place where these many lines of activity converge. It is also the point of primary interaction between the Service and the Office of the Secretary, the other agencies of the Department with health missions, and other Federal and non-Federal agencies whose work relates to ours.

OFFICE CAPABILITY IMPROVEMENT

For these reasons we have considered that the strengthening of the Office of the Surgeon General is a matter of high urgency. We have given it full and thoughtful attention in the reorganization process. We have been particularly concerned with improving our capability for planning and evaluation, for activities related to legislation, and for efficient administrative and personnel management.

PERSONNEL AND FUNDING INCREASES

We are requesting, therefore, an increase in 1968 of 110 positions and \$1,365,000 over the comparable figures for 1967.

RESPONSIBILITY INCREASES AND PERSONNEL NONINCREASE

Enormous growth, both in size and in diversity of responsibility, has characterized the Public Health Service in recent years. In less than two decades it has become the world's foremost supporter of biomedical research, a primary force in the development of health manpower and facilities, and a source of stimulation and support for new ways of bringing health care within reach of all the American people. The responsibilities of the Surgeon General have broadened and increased accordingly.

Yet there has been no corresponding increase in the immediate staff support essential to him in discharging these heavy, heavy responsibilities. The 110 new positions requested are intended to help meet this need. They include 59 for the Office of Administrative Management, 16 for the Office of Program Planning and Evaluation, 15 for the Office of Personnel and 20 for other organizational units of the Office of the Surgeon General.

OFFICE OF ADMINISTRATIVE MANAGEMENT

The Office of Administrative Management has been newly established under the reorganization of the Public Health Service. It brings together, under the direction of the executive officer, the servicewide management support units located in the Office of the Surgeon General. This office advises the Surgeon General and his top-level staff officers on management implications of Public Health Service plans and op-

erations. It assists in establishing policy and providing servicewide leadership in the areas of budget and fiscal administration, procurement and materiel management, internal audit, data management, organizational planning, and planning and utilization of buildings and facilities.

NEW AND EXPANDED PROGRAM WORKLOAD

We are requesting 59 additional positions to cope with the constantly expanding workload resulting from new and expanded programs. We need to improve the effectiveness of our administration of grants and contracts which are becoming more numerous each year. We plan to establish a system development staff to develop, operate, and maintain a coordinated management and program information system for the Office of the Surgeon General.

While substantial progress has been made in improving overall financial management, we have not always been able to keep pace with problems of rapid program growth. We must still grapple with the growing volume of financial information and devise techniques for extracting from this mass the essential data needed for making key decisions.

PROGRAM DEVELOPMENT AND IMPLEMENTATION LEADERSHIP

A significant strengthening is needed in our capacity to assess quickly and accurately the budgetary implications of policy and program proposals, to process and report current accounting and other fiscal data in more meaningful forms, and to update and simplify our entire system of budgetary and expenditure controls. These advances are essential components of the Surgeon General's total effort to exert more effective direction and leadership over program development and implementation in the Public Health Service.

CONSTRUCTION PLANNING COMPETENCY INCREASE

The continuing growth of the Service generates a continuing need for expansion and improvement of its physical plant. We are requesting seven additional positions in the Division of Buildings and Facilities to strengthen our competency in construction planning, in development of guides and procedures for maintenance and repair, in acquisition of new space, and in the design and layout of research laboratories and hospitals.

Senator HILL. We had a good bit of testimony this morning about designs and plans.

Dr. GEHRIG. Yes, sir; Senator, in the reorganization last year, the Division of Buildings and Facilities was developed and has brought together expertise from various areas of the Service to meet what you recognize is a rather large burden.

OFFICE OF PROGRAM PLANNING AND EVALUATION

In the Office of Program Planning and Evaluation, we are requesting 16 additional positions to help provide staff services relative to long-range planning, evaluation and health policy formulation. This office faces important new and expanded responsibilities includ-

ing coordination of a Servicewide planning-programing-budgeting system. It is also applying methods of health systems analysis and research to identify cost-benefit criteria application to various program areas.

HIGH-QUALITY HEALTH PERSONNEL DEVELOPMENT AND RETENTION

Fundamental to the success of our health programs and those we carry out with other agencies of Government is our ability to attract, develop and retain high-quality health personnel. The personnel function of the Service has been the subject of several studies, and we are continuing our review of this vital area.

RECRUITING PROBLEMS

Senator HILL. Do you have much trouble getting personnel now?

Dr. GEHRIG. Yes, sir; I think this is a key problem for the Service. In leadership and professional and management areas, we are competing as you well know in a scarce market and it is not easy.

Senator HILL. You don't have quite as attractive salaries to offer?

Dr. GEHRIG. No, sir; I think Dr. Shannon has repeatedly pointed out his very acute problems and we feel this in all other areas of the Service.

We are competing not only in a scarce market area, but without accoutrements, especially salaries that are available in other areas.

Senator HILL. If a corporation wants a man, if they need him, whatever it takes to get him, they can pay him; is that right?

Dr. GEHRIG. I think this is largely true. I am sure they have restrictions, too, but I know when they go after someone, they can make the dollar talk.

Senator HILL. We have seen some illustrations of people who have left the Public Health Service. You cannot blame them or criticize them, as the offers were so much better.

Dr. GEHRIG. You know very recently we have had four leadership people who have completed careers in the Service and been on duty for extended periods of time, and each has gone on to any other position where the salaries are two or more times what they were making in the Government.

Senator HILL. That presents a problem.

Dr. GEHRIG. It really does. I must say we are gratified even though our salaries are not that high, we are able to get people who enjoy the program and do come with us.

Senator HILL. You have some mighty fine people.

PERSONNEL IMPROVEMENTS

Dr. GEHRIG. Thank you.

In connection with this personnel function, 15 positions are requested in this budget to improve our personnel efforts, particularly in recruitment, career development and the automation of personnel information and processing procedures.

BALANCING OF COMPETING DEMANDS FOR SUPPORT

Mr. Chairman, we are at a time when the just aspirations of the American people for better health far exceed the resources available to

fulfill them. At such a time there is a critical need for responsible administration, for striking and maintaining a balance among competing demands for support—demands each of which is fully justified but none of which can be fully met because of limits on the total resource.

The Office of the Surgeon General should be equipped to view the Nation's health broadly and in depth and to present to you and to the Nation a balanced picture of needs and priorities. The increases we request this year are intended to help us direct the programs of the Service in such a way that maximum benefit is achieved.

I shall be glad to answer any questions you may have.

BUDGET BUREAU REDUCTION

Senator HILL. How much will the reduction that was made by the Bureau of the Budget impair the attainment of these goals?

Dr. GEHRIG. I think the Office of the Surgeon General has faced this as have other agencies of the Government, realizing there are limitations in the budget. We have a decrease of a total of 100 positions over the total request that went to the Bureau of the Budget.

I think this will put a crimp in a variety of activities. You may note there is a substantial drop in the Office of Personnel, and I don't mean to overemphasize this issue, but the Surgeon General, and we are tremendously concerned with our better handling of this particular area, because of the needs for top-quality people—not only their attraction, but their development.

These cuts cross through a variety of our areas. In each instance it is going to demand that we make the most of what we get, if you will, and attempt to do the job despite this.

Senator HILL. Despite this, what we might say, shortage of personnel: is that right?

Dr. GEHRIG. Yes, sir.

Senator HILL. But you are some better this year than you were last year?

Dr. GEHRIG. Yes, sir; we have, I think, taken a very hard look across the board. I appreciate while we talk of limitations of dollars for expenditure that we have included in our budget this year a request for 110 positions within the Office of the Surgeon General, and funding support to it that runs to \$1,365,000.

LEGISLATION CONSIDERATIONS

If I might indicate within this area we have, if you will, picked and chosen as to where we wish to add support. In addition to the area that I mentioned to you in personnel, there are a rather wide variety—legislative affairs, an area in which we need additional expertise to be responsive to the Congress and to the others for the support that we should be able to provide in consideration of bills and the development of program information, and so on.

INFORMATION SYSTEM DEVELOPMENT

Similarly, we have had a very important need for the development of an information system in the Office of the Surgeon General—this

would be of assistance to him, those above him, and also, to the programs to bring together the variety of activities that the Public Health Service has and to permit him to establish priorities across organizational lines that relate to program intent.

This is an important area that is also included and is provided for within the budget.

Senator HILL. And is provided for here?

Dr. GEHRIG. Yes, sir.

Senator HILL. Anything you would like to add, sir?

Mr. KELSO. I would just like to further emphasize what Dr. Gehrig has said. One of the important tasks facing the OSG is the development of an information system to serve the program and management needs of the Surgeon General. We also need to strengthen other staff areas in the Office of the Surgeon General, including the Division of Buildings and Facilities. As you noted from this morning's testimony, we have a rather extensive facilities program. In addition, we believe it is imperative that the Office of the Surgeon General be strengthened to better discharge its directing, coordinating, and central services responsibilities.

Senator HILL. Do you have anything to add, sir?

Mr. CLAGUE. No; I don't have anything to add.

Senator HILL. Off the record.

(Discussion off the record.)

SUBCOMMITTEE RECESS

Senator HILL. On the record.

We want to thank you gentlemen very much.

The committee will now stand in recess.

(Whereupon, at 12:25 p.m., Tuesday, April 18, 1967, the subcommittee was recessed, to reconvene at the call of the Chair.)

DEPARTMENTS OF LABOR AND HEALTH, EDUCATION,
AND WELFARE, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1968

THURSDAY, APRIL 27, 1967

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:05 a.m., in room 1224, New Senate Office Building, Hon. Lister Hill (chairman) presiding.

Present: Senators Hill, Javits, and Cotton.

DEPARTMENT OF HEALTH, EDUCATION, AND
WELFARE

PUBLIC HEALTH SERVICE

NATIONAL INSTITUTES OF HEALTH

STATEMENT OF DR. JAMES A. SHANNON, DIRECTOR; ACCOMPANIED BY DR. STUART M. SESSOMS, DEPUTY DIRECTOR; DR. G. BURGESS MIDER, DIRECTOR OF LABORATORIES AND CLINICS; DR. JOHN F. SHERMAN, ASSOCIATE DIRECTOR FOR EXTRAMURAL PROGRAMS; RICHARD L. SEGEL, EXECUTIVE OFFICER; CHARLES MILLER, FINANCIAL MANAGEMENT OFFICER; AND JOSEPH S. MURTAUGH, CHIEF, OFFICE OF PROGRAM PLANNING, NATIONAL INSTITUTES OF HEALTH; DR. LEO GEHRIG, DEPUTY SURGEON GENERAL; G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

PREPARED STATEMENT

Senator HILL. Dr. Shannon, we are happy to have you back with us. We will be delighted to have you proceed in your own way.

Dr. SHANNON. Senator Hill, if I may, I would like to submit a written statement for the record that generally traces the development of the National Institutes of Health and outlines the content of the present budget that is before you.

Senator HILL. All right, sir.

(The statement follows:)

There are twelve separate appropriations in the Bill now before you which, together, provide funds for the programs of the National Institutes of Health.

The Directors of the appropriate Institutes and Divisions will provide detail about the specific aims, accomplishments, and needs of the activities supported by each of these appropriations. I should like to speak about their common purposes and their common problems.

Medical research in this country has been, and is, so closely interwoven with the evolution of the NIH support programs that it will be logical to outline the development of these programs.

At present, about 40 percent of our total national expenditure for medical research is provided through the NIH appropriations. NIH is by far the largest single source of support for medical research in this country. The character of the programs through which this support is provided—and, incidentally, the manner in which they are administered—plays a substantial role in determining the character and directions of our national medical research effort and, in a very real sense, the quality of life of the American people. I suspect that most Americans agree with the view expressed some years ago by Professor Will Durant, who popularized philosophy in the 1930's, that "The health of nations is more important than the wealth of nations."

The tremendous strides that have been made during the past twenty years in our understanding of biological processes and in our ability to deal effectively with many disease problems has added immeasurably to our national wealth. This is true if this progress is estimated, however imprecisely, in economic terms—such as added years of individual productivity or the reduction in time lost from work. It is overwhelmingly true if the measure is humanitarian—the suffering that has been eased or prevented, the lessening of permanent disability, the young children and young parents whose lives have been saved, or the increasing number of people who are able to enjoy a vigorous and healthy old age. It is difficult to estimate in a meaningful way the consequences to a child and his family of the avoidance of death or disability due to polio, or the restoration to normal development of the child with complex congenital heart disease, much less the consequences to the family unit of the early detection and care of uterine cancer.

There is in progress a quiet revolution in the practice of medicine as the result of research. The advent of antibiotics has sharply reduced the ravages of unpreventable infections; new techniques for cardiac and other forms of surgery have made it possible to intervene in situations which a decade or two ago were beyond surgical help; drugs for the control of hypertension have significantly reduced the death rate for heart disease among middle-aged persons; a number of viral vaccines are now in common use.

The American Medical Association recently reported that the introduction of new products has been so dynamic that 7 out of 10 now on the market were not available ten years ago.

New knowledge has greatly changed the approach to the treatment of disease and the attitude of the practicing physician to science. Fifty years ago, few physicians were concerned with scientific investigations—their main professional interest was the application of existing empirical knowledge which changed very little from year to year. Today, while relatively few practicing physicians are themselves engaged in formal research, they are fully aware of the impact of science on their capability to diagnose and treat disease.

But I am less concerned about the progress of the past than I am about the vast problems that still remain to be solved.

Despite the great strides forward in recent years, the biomedical sciences are still in a primitive stage of development. The lack of understanding of underlying causes is still the main barrier to the solution of the major chronic illnesses. Much of biological research must continue to be descriptive and observational and its approach to the solution of problems is still, necessarily, empirical. The unifying and clarifying principles and "laws" that transformed alchemy into chemistry and natural philosophy into physics have yet to be uncovered in the life sciences. In fact, too frequently a major step forward brings into view still larger—and more forbidding—areas of unknown territory. For example, the success in combating bacterial infectious diseases laid bare, for all to see, the puzzling roles that seem to be played by viruses in both acute and chronic diseases.

The puzzling and exasperating delays that mark the progress of medical research are due to the large gaps in fundamental knowledge. The history of immunization against infectious diseases provides a typical example. The demonstration that inoculation with infective material from a calf would prevent small-

pox took place in 1796 but because it came about without any real understanding of the nature of the disease or of the principle of vaccination, it remained, for nearly a century, simply a technique for preventing a specific disease. Not until Pasteur, Koch and others established the principles of bacteriology in the 1880's, was it possible, in a relatively short time, to control such diseases as diphtheria, tetanus, bubonic plague, and scarlet fever.

Even so, basic knowledge was still insufficient to cope with many other infectious diseases. The existence of 'ultravisible viruses' was deduced in 1898 but many years elapsed before it became possible to isolate them or grow them in a laboratory. Polio, for example, was identified as a virus disease as early as 1909 but it took more than 40 years of scientific effort on many related problems to pave the way for a successful vaccine. Not until the 1950's were knowledge of the disease and techniques for vaccine development adequate to the task. It is, incidentally, instructive to note that the tissue culture techniques used were the result of research having no direct relation to the polio problem. They were developed partly by scientists studying the characteristics of cancer cells and partly by scientists trying to improve the production technology of the fermentation industry.

We are now in a period of rapid development of viral vaccines that is, in many ways, comparable to the progress that followed Pasteur's discoveries 80 years ago. In addition to the polio vaccines, we now have vaccines for such common viral diseases as yellow fever, influenza and measles and for several less common respiratory diseases. In the foreseeable future, we shall have vaccines for German measles (rubella), mumps, and a number of other respiratory diseases whose causative viruses have been identified.

In other fields, the problems are more difficult. For the chronic diseases with which medical research is now primarily concerned—heart disease, cancer, an array of metabolic and neurological diseases, and congenital defects—the valleys of ignorance are broader than the peaks of knowledge. The exploration of the cause of these diseases or defects—which must precede the development of wholly effective treatment and preventive measures—is most formidable. In fact, many of these diseases probably have no single cause. Rather, the cause of disease and the determinants of the rate of progress in dealing with it are likely to be a combination of chemical and biological, environmental and developmental, and behavioral and sociological factors. A total understanding of these diseases will require research in many disciplines and in many directions.

The change in the pattern of major health problems from the acute infectious to the more complex chronic diseases and the consequent change in the research emphasis is paralleled in the evolution of NIH and its programs.

NIH had its beginnings in 1887 in a small bacteriological laboratory at the Marine Hospital on Staten Island. This was soon transferred to Washington and became the Hygienic Laboratory. For its first 20 years, it was exclusively concerned with communicable diseases which were then the major public health problem and accounted for more than half of all deaths. About the time of World War I, its activities were gradually expanded. The Hygienic Laboratory discovered the cause of pellagra, a dietary deficiency disease then common in the South, it did pioneering work in the study of shock resulting from immunizations, and it formulated the first sound theory about personal sensitivity that helped to lay the foundation for the study of allergies—which were until then unknown and unsuspected.

As the application of the new science of bacteriology progressively brought the major infectious diseases under control, the death rate for these diseases rapidly declined—from 648 per 100,000 population in 1900 to 208 in 1937. By 1950 the rate was down to 65—a tenth of what it had been half a century before. But partly as a result of this success, the other major causes of death and the so-called chronic diseases loomed larger as national health problems. The death rate for malignant neoplasms rose from 64 in 1900 to 112 in 1937, for cardiovascular and renal diseases from 345 to 455, and many people who would formerly have fallen victim to diphtheria, smallpox or typhoid fever now survived to enjoy an arthritic old age. The first significant step to extend the research activities of NIH to these fresh areas of public concern was the creation of the National Cancer Institute in 1937.

The National Cancer Act of 1937 marks a sharp turning point in the history of NIH. It set the stage for a series of actions which were completely to alter the scope, orientation and mechanisms not only of the NIH programs but of the whole national biomedical research effort. The ultimate effect of the pattern set by the Act was—

To focus attention on specific diseases, or groups of diseases, and to authorize special programs to discover the cause, facilitate the diagnosis, improve the treatment, and, hopefully, devise preventive measures for these diseases;

To complement the research conducted by NIH itself with grants-in-aid to non-Federal institutions for research projects directed towards the same ends;

To give NIH responsibility not only for the conduct and support of biomedical research but for research-training through the award of fellowships; and

To dramatize these disease-oriented programs—and give them greater public visibility—by grouping them in separate categorical Institutes named for the major disease entities within their area of responsibility.

The transformation did not, of course, come about all at once. The Cancer Act merely authorized a comprehensive cancer program that included research projects grants and fellowships for this purpose only. Its immediate effect was to create two Institutes in 1937—the National Institute of Health and the National Cancer Institute—on the new grounds in Bethesda. But the new grant program awarded only 9 research project grants, totaling, \$91,000, in 1938.

The intervention of World War II slowed the pace of development and—except for budget increases to off-set war-time inflation and to pay for special war-related research projects undertaken by NIH—the situation remained fairly static. In 1945, the two Institutes had appropriations totaling \$2.8 million of which \$170,000 was for research grants. Total national expenditure on medical research, from all sources, at this time was about \$70 million.

The Public Health Service Act of 1944 extended the authority to award research-project and research-training grants to the other programs of NIH and prepared the way for the post-war transfer to NIH of the medical research projects sponsored by the war-time Office of Scientific Research and Development.

The creation of the other categorical Institutes then followed in rapid order. In 1948, the National Heart Institute and the National Institute of Dental Research were created by acts of Congress which, at the same time, created NIH's present "federal" structure and changed its collective name to the National Institutes of Health. A National Microbiological Institute was administratively established—its name subsequently changed to the National Institute of Allergy and Infectious Diseases as its scope enlarged. In 1949, the Division of Mental Hygiene became the National Institute of Mental Health. In 1950, the Congress created the National Institute of Neurological Diseases and Blindness and the National Institute of Arthritis and Metabolic Diseases.

This organizational growth was accompanied by considerable construction at the Bethesda campus, which was largely completed by 1953, and appropriate increases in the direct operating budget. There was, however, little program expansion during the period from 1950 to 1956. While this was partly due to the Korean war, it was also, necessarily, a period during which the new Institutes clarified their goals and program policies, the grant mechanisms were refined, and a stable administrative apparatus was developed.

The grant mechanisms were well established and the direct operation was well underway by fiscal year 1956. The eight appropriations for the National Institutes of Health for that year totaled \$98.5 million of which \$40.5 million was for research grants and contracts, \$17.3 million for training grants and fellowships, \$28.3 million for direct research, \$10.4 for public health and disease control activities, and \$2 million for administration and program management.

The next step in the evolution of the NIH programs was the passage of the Health Research Facilities Act of 1956. This legislation, which authorized matching grants for the construction of research facilities, rounded-out the scope of NIH activities so that they then had available the essential mechanisms for the development of a meaningful research program national in scope. NIH could finance the training of scientists, it could enhance the physical plant available for scientific endeavors, and it could provide for the assistance needed in the actual conduct of research.

The period of rapid program expansion was initiated after Mr. Folsom, who was then Secretary of HEW and deeply concerned about the consequences of serious illness, undertook a thorough inquiry into the quality of the NIH operations, the opportunities that existed for productive research, and the level of funding that would be required to take advantage of these opportunities. He came to the conclusion that the expansion of productive research should be limited only by the number of highly qualified scientists available. He proposed sub-

stantial increases in the NIH budget both for research and for training. The Congress immediately responded to his assessments of the problem. Broad program needs were immediately satisfied and from 1957 through 1963 the appropriations were increased, largely as the result of specific actions by the Congress, at a rate of approximately 30 percent per year.

For 1965—which ended a decade of very rapid, across-the-board growth—the cost of this new complex enterprise was at the level of 1.0 billion.

Program development since 1964 has not been as general or undifferentiated as it was during the period of rapid growth. Rather, this has been a period of selective development. The NIH has continued to support activities which, by scientific consensus, are considered to be important and relevant to serious disease problems. However, increasing staff time has been devoted to an analysis of the ongoing activities and deficient areas have been identified for special examination. Frequently it was found that these areas, though important, were not progressing because they did not conveniently fit into the usual discipline orientation of the academic enterprise. It became increasingly obvious that special organizational arrangements would be required if such fields were to flourish and to make their contributions to the complex of problems under study.

Some of these program-problem areas are of sufficient importance to list as examples of this programming activity—

Special problems that relate to the causation of cancer and the intimate interplay of chemicals and viruses.

Problems of aging, many of which involve complex and inter-acting biological, psychological, environmental and social factors;

Research in pharmacology and toxicology which is concerned not only with drug development and the identification and prevention of adverse reactions but also with the problems created by the increasing chemical hostility of the manmade environment in which we live;

Development of the dental sciences to establish a sounder scientific base for the advancement of modern dentistry;

Problems of child development which, as in the case of aging, involve a complex array of factors and which can result in life-long disabilities and vulnerabilities to disease;

And, finally, greater emphasis on special problems, such as deafness, and disease that can result in blindness.

The definition of some of these broad problem areas led, very early, to the establishment of two non-categorical Institutes which became operational in 1963. The National Institute of Child Health and Human Development was established because the categorical, disease-oriented approach of the other Institutes is not well-suited to the exploration of problems that involve the complex problem of human development. A more comprehensive research approach is needed to shed light on this cycle of experience that is common to every human being. The creation of the National Institute of General Medical Sciences recognized that the categorical programs of the major Institutes depend on many common areas of science no one of which could properly be assigned to an individual Institute. The vigor of these common areas is an important determinant of progress in each and every Institute. The new Institute was assigned responsibility for the health and vigor of these common scientific undertakings.

A new dimension was added to NIH by the Heart Disease, Cancer and Stroke Amendments of 1965. The assignment to NIH of responsibility for the Regional Medical Programs constitutes a major commitment to a program that, though research-related, is primarily service-oriented.

This program grew out of the recommendations of the President's Commission on Heart Disease, Cancer and Stroke. Simply stated, its purpose is to extend the excellence of medicine in the academic setting to the primary battle ground of disease where it occurs, that is, in a community setting.

The present programs of the National Institutes of Health now comprise five major groups of activities:

(1) The conduct of research in its own laboratory and clinical facilities, and through contracts with other institutions;

(2) The support of research through grants;

(3) The support of training of highly-qualified scientists and clinicians for research careers;

(4) The construction of health research facilities through matching grants; and

(5) The support of a national program to strengthen medical service through the new Regional Medical Programs.

I should like to indicate briefly how the \$1,187,250,000 requested for FY 1968 is distributed among these five major activities.

Funds for direct operations include \$81.7 million for the conduct of research by the NIH scientific staff and \$113 million for goal-oriented collaborative projects; \$644.5 million is for the support of research through grants; \$194.6 million is for the training grants and fellowship programs; \$35 million is requested for the Health Research Facilities Construction program; \$59.4 million is for the new Regional Medical Program; \$59 million is for other direct operations, program direction, administrative services and management of the extramural program.

The bulk of the NIH budget is devoted to the support of medical research, and closely related activities, outside its own laboratories and clinics. However, funds requested for research conducted by NIH itself, are substantial. The extraordinary excellence of these scientific activities set the level of excellence of the whole enterprise. The competence and personal involvement of NIH scientists with the major research problems on the frontiers of the biosciences provides a solid and indispensable intellectual base for all other NIH activities.

The Committee will wish to consider what role the NIH programs should play in the future and to decide—in the light of the testimony for the various Institutes—what activities are desirable and feasible. I am confident that the amount requested in the budget estimates will be amply justified by the benefits that will accrue to the people of this country from the activities that these funds will support.

BUDGET REQUEST

Dr. SHANNON. I would like to take this opportunity, if I may, to present to you, in a somewhat different form, some aspects about the budget request which totals \$1,187,250,000, in 12 separate but inter-related appropriations.

I would be less than honest were I not to say that we make no pretense that the budget that is presented to you is an optimal budget, if one views the opportunity or if one views the social consequences of the advances that may be expected. But it does represent a working compromise between what should be done in the biomedical field and what can be done in a fiscal year when other Federal purposes have been determined to have higher priority, and when Federal spending will be higher than Federal income.

Senator HILL. You mean more important than life itself.

Dr. SHANNON. Senator Hill, the circumstances surrounding the development of this budget have led us to examine the various elements that compose the aggregate budget and the aggregate budget itself. I come away from such an analysis, which has taken a number of months of penetrating study during which we examined the elements that are to go forward and those that are to be held constant or reduced, convinced that it requires something different in the way of a presentation of our problems. Having arrived at certain general conclusions I would like to share these views with the committee.

Senator HILL. All right, sir.

SELECTIVE SPENDING

Dr. SHANNON. If we were to summarize the results of our examination of the growth and development of NIH during the past 15 years, we would conclude that, in general, the small increases that we propose to you must be expended in a highly selective fashion.

Senator HILL. When you say "small increases," you mean in the budget?

Dr. SHANNON. In the budget, yes. The aim must be to hold the whole enterprise together during a period of limited fiscal support,

to take advantage of such small opportunities as are presented to redeploy some of our resources and to do these two things in the hope that the pause in the development of these programs will be of short duration.

VISUAL PRESENTATION OF CHARTS AND SUMMARIES

From these considerations, several features of our programs have emerged that we have summarized in a series of very simple charts illustrating some important and major conclusions about the rise and character of the enterprise. I have tried to present comparisons with a number of other activities and economic indexes because I feel that a comparative view is more understandable than an absolute examination of the proposed expenditure.

RESEARCH AND DEVELOPMENT

RELATION TO GROSS NATIONAL PRODUCT

The first chart that I would call to your attention shows all research and development as a proportion of the gross national product. The index year is taken as 1950, and this is compared with the present year of 1967.

This chart illustrates the national consensus that the future of the Nation, our security, our economic basis depends on how effectively we exploit our intellectual resources—as contrasted to development during the first half of the century which was the culmination of a period of progress that resulted largely from a very inventive and vigorous exploitation of natural resources.

The increase in research and development from 1 percent to 3 percent of the gross national product reflects that national consensus.

BIOMEDICAL

The second chart shows the role of biomedical research as a part of all research and development. We developed this chart and have used it, over the years, to counter some of the scare headlines that have characterized some of our program increases as being explosive, as getting out of hand. I recall one headline saying "Money to Burn."

Senator HILL. I recall that too, Doctor.

Dr. SHANNON. I call to your attention that the major increase in research and development in the biomedical field is a simple reflection of the growing dependence of our modern economy on science and technology. You will recall that, in addition to the increase in the gross national product, the proportion of the gross national product devoted to research and development rose from 1 to 3 percent over the 17-year period.

Senator HILL. We are in a world of science today.

Dr. SHANNON. Yes, sir. Medical research has participated in that growth and change. The part of all research and development that is devoted to the biomedical field has gone from 6 to 8 percent.

MEDICAL SCIENCES

In a subsequent chart I will point out that the change in the proportion of research and development that now goes to the medical sciences is more reflective of the inadequacy of support in the base year of 1950 than overgenerous support at the present time. The initial increase during the later years of the 1950's, did more to redress obvious deficiencies than to provide for purposeful expansion of the enterprise.

There is another indicator that you haven't seen before—

Senator HILL. Doctor, what is this figure down here, the small figure to the right, in the green?

Dr. SHANNON. This is the biomedical research, \$2.3 billion.

Senator HILL. And the other figure?

Dr. SHANNON. \$161 million. This is medical research from all sources: Federal, the private sector, industrial, academic, in the year 1950 and in the year 1967.

Senator HILL. From \$161 million to \$2.3 billion?

Dr. SHANNON. Yes, sir.

MEDICAL INDUSTRY EXPENDITURES

The next chart looks at medical research as part of a rather important innovative industry—what might be called the health industry. We see here that this industry, in terms of the cost of medical care from all sources, expended \$12.9 billion in 1950, and this year will spend approximately \$43 billion. In 1950 expenditure for medical research was \$161 million—again from all sources—and in 1967 it was \$2.05 billion which represents a change in the research and development support of this industry from 1 to 5 percent. If one were to view this as an industrial operation, one would equate total medical cost to the figure that an industry would term gross sales, and one would equate the expenditure on medical research to the proportion of gross income that is diverted to research and development. I think that this is a very realistic way to look at research and development in the medical industry.

I would point out that in any innovative industry the figure is substantially greater than 5 percent. For example, in the electronic industry it is closer to 20 percent. If one takes the individual segments of industry that constitute the major innovative input in biomedical research—some of our great pharmaceutical houses—again one gets substantially above 10 percent. Viewing this from a purely economic standpoint, one can say that this relationship between research and development and gross sales is substantially higher than in the tractor industry, if you will, but substantially lower than in the electronic or pharmaceutical industry. But, Mr. Chairman, I think we have more problems than are involved in the building of better tractors.

SERVICES INCREASE COST

I would like to make another point here that is relevant to a comparison of the funds expended for research and development with gross sales which we equate with the cost of the delivery of services. I think we all realize that in the case of medicine we are faced with rapidly increasing cost of services. There is an established trend.

Hospital costs this year will increase by about 16 percent. The increase next year is projected to be somewhere between 15 and 17 percent. This is due to such factors completely external to the medical field as our minimum wage laws, a tight labor market which makes the hospitals competitive with other industrial groups for labor, and the inadequate salaries of so-called paraprofessional personnel—the nurses, technicians, and the like. These are well-established trends that will substantially increase our costs during the coming year. I doubt that we can greatly reduce medical costs by innovations in the better use of physicians or the better use of community resources. I think that these are essential, but their main payoff will not be a lesser cost but the improvement of the services that are available to people.

ELIMINATION OF DISEASE COST REDUCTIONS

Now, Senator Hill, you must realize that I am prejudiced, but I would say that if one forgets about compassion for those suffering from disease and disability; if one forgets about the social dislocation of families or segments of our society and looks at research and development in these fields in a hard-headed fashion, in terms of the economic payoff of these things, it becomes quite clear, that the only possibility of drastic reduction in medical cost will come from the reduction of disease and the elimination of the need for medical services, rather than simply from improving the method of delivery.

Senator HILL. That does not hold much prospect; does it? The latter course.

Dr. SHANNON. Well, Senator Hill, I do not like to disagree with you, sir, but I would like to quote some examples of how this has already paid off.

Senator HILL. I mean so far as the delivery of the service is concerned.

Dr. SHANNON. No, sir.

Senator HILL. That is what I meant. I didn't mean the other.

Dr. SHANNON. I think the only possibility of really radically reducing cost is through the elimination of disease.

Senator HILL. The elimination of the need for the service.

Dr. SHANNON. That is right.

Senator HILL. But not in the delivery of the services?

RETROLENTAL FIBROPLASIA

Dr. SHANNON. I will just point out some general examples. You may wish to explore this further with the Institute Directors. You may remember that as a result of funds specifically added by this committee more than 10 years ago, it was possible in a definitive way to determine the cause of retrolental fibroplasia and remove what was becoming the most important single cause of blindness in our Nation.

Senator COTTON. Your terms are too technical for me.

Dr. SHANNON. Retrolental fibroplasia is a disease of the eye that causes blindness. Some years ago this was the most important single cause of blindness in our country. It was determined, by investigation, to be due to the high concentration of oxygen that was given to premature babies as a lifesaving measure. The high oxygen concentration caused the disease. The discovery of that fact resulted in the

cessation of the use of high oxygen concentration as a normal way of handling premature babies, and did away with the disease.

Senator COTTON. This has nothing to do with glaucoma?

Dr. SHANNON. No, sir.

Senator COTTON. This caused more blindness than glaucoma?

Dr. SHANNON. At the time it was interrupted, it was the largest single cause of blindness.

INFECTIOUS DISEASE VACCINES

For infectious diseases we now have a whole array of vaccines that prevent these diseases, and more are coming.

Senator HILL. You spoke about the overall expenditures on the part of the Government and foundations and associations, organizations, and the private sector. I have been impressed that most of these vaccines have come to us through what we call collaborative effort. Isn't that true?

Dr. SHANNON. This is correct.

Senator HILL. Where we have had all these different sectors making their contributions?

Dr. SHANNON. Yes, sir. But I would point out, Senator Hill, that, except for the very important contribution of the National Foundation in the development of the polio vaccine, the bulk of the advances in the development of the new vaccines have come either from industry or from federally supported work, usually from a combination of the two.

Senator HILL. Don't tell Mr. Cotton I said so, but John Enders, I think, did the first fundamental work with the funds from the Government: didn't he? John Enders, from Harvard, when he grew these viruses in the test tube?

CARDIOVASCULAR DISEASE

Dr. SHANNON. In the field of cardiovascular disease, the advances now provide a normal life for infants with congenital heart disease and provide extension of normal activity for a whole array of victims of chronic cardiovascular disease that is now amenable to modern surgery. The advances in the cardiovascular field are economically important because they give victims of these diseases the opportunity to lead what is essentially a normal life rather than leading to prolonged hospitalization or death; one accompanied by high medical cost, the other by high economic penalties for the family.

VENOUS RETURN

Senator HILL. Doctor, we have had an illustration of what you say. I recall former Congressman Miller, who died just a short time ago. He appeared before our committee some several years ago. I think he had about three and a half feet of artificial plastic along the side of his leg in lieu of his natural vein.

Dr. SHANNON. Venous return?

OCCLUSION OF LARGE ARTERIES IN STROKES

Senator HILL. That is right. What progress are you making inside the skull?

Dr. SHANNON. Senator Hill, I can tell you that perhaps 2 years from now, I cannot tell you now. I can say that in two clinics that have concerned themselves in depth with the role of occlusion of large arteries in the causation of stroke, one in the Neurological Institute in New York, the other in the department of surgery at Baylor, in Houston, with DeBakey. They concluded that in a substantial number of individuals massive strokes are due to causes that are predictable and are correctable. But I do not want to quote the figures that come from these two clinics because the experience of these two clinics, being, as they are, so expert in the fields of vascular surgery, is probably distorted by the high number of the referrals they get.

STROKE CENTERS

Dr. Masland has now completed the establishment, I believe, of some 10 stroke centers which will provide, on a fairly wide geographically dispersed basis, the opportunity to determine, through careful study of a normal flow of patients, precisely what is the cause and then what corrective measures can be instituted. But, Senator Hill, I do not have that information now. We think we will have it in a period of some 2 years.

Senator HILL. I will say that the day before yesterday I was with Dr. DeBakey. He seemed to be pretty optimistic.

Dr. SHANNON. Yes, sir.

Senator COTTON. If that process becomes perfected, it will delay the hardening of the arteries and the blood vessels in the brain?

ARTERIAL DISEASE OF NECK VESSELS

Dr. SHANNON. What Dr. DeBakey has found, Senator Cotton, in his cases in the Methodist Hospital in Houston is that a very substantial number of patients referred to him have arterial disease of the great vessels of the neck. The arterial disease leads to partial occlusion and eventually to complete stoppage of blood flow to massive arteries in the brain. Now he has found that this is diagnosable and treatable by the injection of opaque material in the arterial tree, isolation of the lesion, removal of the lesion, and reestablishment of circulation through the use of plastic arteries.

He now has had this vascular surgery follow-up study for as long as 10 years. It would appear from his data that vascular disease, which very frequently involves the large vessels of the neck, the femoral artery or the like, is an isolated disease—that if one removes the isolated injury, one can restore normal function.

SENILITY

Senator COTTON. Also that would even delay senility, would it not?

Dr. SHANNON. The main thing is that it would delay immediate disability.

Senility, that one commonly associates with aging, is due to multiple small injuries resulting in multiple occlusions and progressive loss

of brain substance. The solution to this problem can only come from a solution of what causes atherosclerosis and how one prevents it.

MENTALLY ILL STATE HOSPITAL DEPOPULATION

Another area I would mention—and I am mentioning these, not because they necessarily represent such dramatic scientific events, but because they represent dramatic economic advantages—is one I am sure Dr. Yolles has discussed with you—the progressive depopulation of our State hospital systems for the mentally ill.

CANCER

The Cancer Society is now having its annual fund drive and anybody who watches television will realize that there has been a surprising increase in the proportion of cancer victims that are cured now as contrasted to, say, 1950.

Senator HILL. You see, you get this word from the Cancer Society on the television. You also get all these advertisements for cigarettes, Doctor.

Dr. SHANNON. Senator Hill, I thought I would mention a few of these advances. You will recall that I said that if one ignores questions of compassion, ignores questions of social dislocation of families and population segments, one still sees very substantial, very broad economic progress as a result of these advances. Now the question arises, though—

Senator HILL. Excuse me 1 minute, Doctor. You spoke about the vascular system and the heart, and the progress there. What about cancer?

CERVIX AND UTERUS

Dr. SHANNON. I would prefer for you to go more deeply into that with Dr. Endicott, but in general the figures show that it is now possible, with the application of modern technology, to eliminate cancer of the cervix and uterus as an important cause of death.

Senator HILL. You are speaking now of the pap smear?

LYMPHOID AND LYMPHATIC TISSUES

Dr. SHANNON. Yes, sir. It is now possible to cure certain cancers of the lymphoid and lymphatic tissues; namely, the leukemia of childhood. It is too early to know what proportion.

Senator HILL. All we get now are largely remissions, aren't they?

Dr. SHANNON. Many of them now have gone long enough that in my mind it is almost certain that they can be regarded as cured. One hundred and fifty have gone 5 years, Dr. Mider says. This is beyond the normal expectation of remission.

CHORIOCARCINOMA

In choriocarcinoma—this is the cancer following incomplete rejection of the placenta in women—it is possible to cure, if picked up in an early stage, more than 80 percent of the women who suffer from this disease. It is possible in some of the cancers that emerge in the so-called sex-dependent organs—the prostate, the ovaries, the breast—to

provide the individual so stricken, not with a cure, unfortunately, but with certainly 2 to 3 or 4 years of very useful life. That was quite impossible 10 years ago.

The benefits of cancer research are not fully told by simple mortality statistics. But even mortality statistics show very broad benefits that have accrued as a result of activities in the past decade.

FIVE-YEAR RECURRENCE PERIOD

Senator HILL. Of course, when you talk about 5 years in the life of a child, that is a mighty short period.

Dr. SHANNON. Five years is. However, the data from observation over the past 30 or 40 years on a variety of therapeutic procedures show that if one does not have recurrence of the disease within a 5-year period it is unlikely that this will recur at a later time. It is not that the disease has been prevented from occurring for 5 years, but that not having recurred in that period it is likely that cure has been accomplished. This is the interpretation of those data.

Senator HILL. This cure is largely chemotherapy?

DEPLOYMENT EFFECTIVENESS

Dr. SHANNON. Yes, sir.

The question arises, if the historical résumé of our activities shows such strikingly effective results, then are there economic grounds that would argue that we could have a more effective program if we were to redeploy our resources?

This has been subjected to serious inquiry for many years, but particularly during the past year because we were in quite a tight budget situation. Our conclusion is that since continuous redeployment is characteristic of all medical research and most certainly of the operations of our program—it is, indeed, a basic characteristic of all rapidly evolving science and technology—we feel that any redeployment we could effect, beyond that which is already envisaged, would not uncover large resources that could be placed effectively at the disposal of new problems.

APPLIED VERSUS FUNDAMENTAL SCIENCE

This also relates to the general question of whether one should expand applied research at the expense of research that might be described as more fundamental. If you agree, Senator Hill, I would like not to discuss this at length but to submit for your consideration and, perhaps, inclusion in the record, a presentation I made in Oklahoma City, when Senator Harris held hearings on the subject of the problem of application of the results of science and the role of applied versus fundamental, that I think, to the best of my ability, expresses our attitude toward the essentiality of the two types of work and the importance of carrying on a sensible mix of the two, if one is going to accomplish the mission. This is not a long dissertation, but it explores some critical examples. It might be helpful for the record at this point.

Senator HILL. We would like to have that in the record in full. (The statement follows:)

NIH—PRESENT AND POTENTIAL CONTRIBUTION TO APPLICATION OF BIOMEDICAL KNOWLEDGE¹James A. Shannon, M.D.²

Senator Harris and members of the seminar, I am pleased to participate in this discussion of "Research in the Service of Man." I should like to congratulate Senator Harris and the Frontiers of Science Foundation of Oklahoma on providing a productive setting for a broad examination of an important series of questions relating to the advance of biomedical knowledge and on extending the benefits of this discussion to the nation.

We who serve in the Washington scene have been particularly impressed with the intelligence, vigor and fairmindedness with which the Senator has directed the inquiries of the Senate Subcommittee on Government Research into the complex and difficult question surrounding the development of constructive policies bearing on the conduct of Federal science programs in relationship to national needs and objectives. We are also aware of the important role that the Frontiers of Science Foundation of Oklahoma is serving in encouraging and supporting an enlightened engagement with science and research in the Oklahoma area. Vigorous private action at the State and local levels is an essential complement to the conduct of national programs.

The preparation of this discussion required that a choice be made between considering some important general issues or the substantive programs of our several Institutes. I chose the former as the most appropriate for me, since a number of the substantive issues will be dealt with by individual scientists actively engaged in the fields they will represent.

In respect to the matter at hand today, I speak, as you will recognize, as the head of an agency which has served a very significant role in the advancement of biomedical knowledge. The role and purpose of the National Institutes of Health in this development is misunderstood by some. NIH is too frequently perceived as a science agency interested in biological and medical problems in themselves, rather than as a health agency utilizing science and research in the war on disease. But permit me to put to rest any uncertainties that may exist in regard to this matter. NIH exists primarily to deal with health problems.

Three major factors play a determining role in the form, content and mechanisms of action of NIH and its programs: (1) the rising social demand to diminish the hazard of serious disease, (2) the state of development of the biomedical sciences, and (3) the inherent nature of scientific advance.

First, the rising social demand to diminish the hazard of the major diseases. This force has been given major expression in the several legislative acts creating the categorical disease institutes which now form the basic structure of NIH. These acts have been complemented by generous and growing budgets in support of the institute programs and by the establishment of other program authorizations essential for the success of the enterprise.

Second, the state of development of the biomedical sciences. The base of knowledge of life processes and phenomena underlying health and disease is still grossly inadequate. Consequently, the development of any diagnostic, therapeutic and preventive capability is still largely dependent upon what are basically empirical approaches, the movement of science in collateral fields, the accidents of serendipity, and the intuitive brilliance of too few gifted individuals. As a consequence of those hard realities, effort has had to be directed, on as broad a scale as resources would permit, to advancing the base of science upon which disease-oriented research efforts are entirely dependent. Thus, a series of derivative missions—the operational imperatives to mounting a comprehensive attack upon health problems—has become an essential part of NIH activities.

I should like to emphasize again that these are indeed derivative from, but none the less indispensable, to the discharge of the primary mission of this agency. These activities encompass the following:

The broad support of undifferentiated and nonprogrammatic research in the universities, medical schools, hospitals and other research institutions through grants-in-aid, and the conduct of research in the laboratories and clinics of NIH at Bethesda and its field stations.

¹ Remarks presented at the Conference on Research in the Service of Man, Oklahoma City, October 25, 1966.

² Director of the National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare.

The training of specialized manpower through fellowships and training grants to provide for our future teaching and research capability on which continued progress in health depends.

The construction of research facilities and the further development of the scientific capabilities of academic and research institutions.

Finally, the conduct of collaborative and directed research programs aimed at specific disease or scientific problems where opportunity for a major advance in knowledge seems clearly possible and where circumstances and urgency warrant an organized and managed effort.

The discharge of these several responsibilities must be through mechanisms which provide the competent scientist some security of opportunity and the institution within which he resides a sense of institutional stability. The mechanisms utilized must also be such as to enhance rather than weaken the educational environment.

These are the integral and vital components of our program for the scientific conquest of disease. Our concern with the problems of bringing research progress to bear upon health practice and the delivery of services is evident in the newly inaugurated Regional Medical Program and the Community Mental Health Center Program. The Regional Medical Program, enacted into law just a year ago, will have an increasing primary impact on the quality of medical services available to the nation.

Thus, the pursuit of our primary mission has had, as a necessary corollary, the building of a productive national medical research system with broad and expert capability. Nonetheless, there is the clear obligation to reach deeply and continuously for opportunities to exploit advances in knowledge where this can be achieved by directly organized activity.

The third determinant factor in the conduct of NIH programs has been the inherent nature of the process of scientific advance and the conditions for the solution of disease problems.

The mechanics of scientific progress in medicine are complex, diverse, and often determined by unpredictable and seemingly unrelated events.

The emergence of broad generalizations relating to particular phenomena.

The direction of these generalizations to the study of a particular problem.

The intensive and sharpening pursuit of promising leads to solutions.

The appearance of a feasible course of action which may result in a useful result or end point.

Concentrated effort for the practical development of a program so perceived.

The broad application of the end product of the research to medical health practice.

This sequence is fraught with uncertainties and is often visible only in hindsight. Moreover, the precipitating events often emerge from unforeseen developments in a wholly uncontrollable manner. The dominant factors in this process are the internal logic of science and the intrinsic purposeful nature of the medical sciences. Research in the medical sciences is pervaded by a concern for achieving mastery over the condition of, and hazards to human life. This circumstance assures a high component of practical and problem-oriented research.

The circumstances under which one intervenes in this natural process to accelerate or direct the course of action in a highly organized fashion is indeed a most critical consideration. One must proceed with caution, since the state of knowledge is such that there are limited opportunities for such deliberate action. Further, such intervention is apt to be expensive and, if undertaken in the absence of an adequate scientific base, is likely to be unproductive and thus wasteful of limited resources. Frequently too, programmed activity, but not programmed research, must be undertaken where the science base is perceived to be inadequate.

Such selections must be made, however; and as our understanding of the biological and behavioral bases of human health and disease increases, the opportunities for these selections will inevitably increase. Consequently, the functional organization of NIH must reflect this need and contain such a capability.

To illustrate this process of scientific advancement and the problems associated with purposeful intervention to accelerate or direct the course of action, I should like to review the background and events which led up to what all acknowledge as one of the triumphs of postwar medical research—the development of the polio vaccine.

One could utilize with equal validity the development of open-heart surgery, of blood-pressure-lowering agents, or of modern antimalarials. Each of these

case histories would have much the same characteristics as that of polio vaccine. My choice to discuss the latter example stems from the relative simplicity of the concept of a preventive agent, the start-and-stop phenomena which were dependent upon the course of development of collateral science, and finally, the possibility to view in retrospect a series of judgments—some correct, some in error.

Altogether, I believe this case provides an experience for all of us which can be expressed in certain general lines of guidance for application to any program being considered for large-scale or intensive development.

The development of a vaccine, in outline form, involves five general steps, as portrayed in figure 1.²

In the case of polio, these steps had the time sequence indicated in figure 2. The question may be posed, Why the long delay—1909 to 1955—between agent identification and general use of a vaccine? A simple answer is that the science base for a definitive development was inadequate prior to the early 1950's and not totally adequate for some time later.

As shown in figure 3, the first attempt to produce a vaccine failed in 1935. This attempt had, as its science base, knowledge concerning (1) the specificity of antigens and antibodies, and the hazards of parenterally administered spinal-cord tissue; (2) a beginning understanding of viruses in the causation of disease, and the polio virus as the specific cause of paralytic poliomyelitis; (3) primitive information on virus modification—by *attenuation* as early as 1884 (rabies) and by *inactivation* as early as 1911 (rabies); and (4) one animal model system requiring the use of monkeys.

In retrospect the 1935 attempt was bound to fail because of an inadequate amount of fundamental information upon which to base the targeted program. The natural history of the disease was not fully understood, the complexity of the viral agents was not known, nor was the mode of transmission of the disease. Further, the crude suspensions of monkey spinal cord did not permit, with the then-current information, complete inactivation of infectivity and, at the same time, the retention of a capability of stimulating antibodies. Finally, simple safety tests could not be devised, and the hazard of allergic encephalitis due to monkey-cord preparations was not taken fully into account. By 1948 it was demonstrated that such immunization was possible in monkeys, a fact of fundamental but not practical use.

The next programmed effort was mounted in the late 1940's and had the benefit of much more information concerning the agents which produce poliomyelitis and about the nature of the disease itself. Equally important, several packages of information were available from other fields of biology which had developed concurrently but whose general objectives had no relation to the practical problems of poliomyelitis or its prevention.

There was substantial increase in the sophistication of the general field of virology, not to mention the Rockefeller Foundation's superb work leading to yellow-fever viral attenuation by Theiler in 1937 and Francis' studies leading to specific inactivated-virus vaccines for influenza in 1945 (see figure 4). The greatest advances, however, were in animal model systems which permitted a progressive understanding of the general characteristics of viral diseases and the properties of their causative agents.

The most important single package of information directly relevant to polio was derived from the field of tissue culture (figure 5). This field had its beginning with Harrison and Carrel at the turn of the century as they applied to mammalian tissue the information derived from earlier studies of the growth requirements of bacteria in culture media. Some of these advances were due to Maitland in 1930, who showed that bits of tissue could be the basis of modest cell growth. His explorations were aimed at developing a more effective method for the production of the vaccinia virus.

The definitive work that permitted this field to move rapidly was done by Earle and his associates in studies of normal and cancer cells in tissue culture. They were trying to determine the biological and cellular characteristics of the cancer cell as contrasted with its normal counterpart. Their contributions, which covered a decade of effort, led to a capability to culture monolayers of cells. The technique was directly transferrable to the polio problem by 1949, and further studies on large-scale tissue culture techniques were transferrable to practical methods for viral production by 1953.

² References are keyed to items in the figures and are grouped at the end of the article.

These later techniques, which made use of deep or suspended cultures, were dependent in no small measure on contributions from the fermentation industry, where evolving technology had produced (1) means for obtaining an array of organic chemicals by fermentation processes and (2) inexpensive techniques upon which the broad and important antibiotic industry is currently based.

The bodies of information which became available in the late 1930's, but particularly the 40's, were both numerous and definitive. They came about from the unorganized efforts of interested scientists, some supported by the National Foundation for Infantile Paralysis, which emerged as a significant factor in the late 30's, and some supported by the Federal Government.

The package of information (see figure 6) which was derived from the polio workers themselves was limited until 1939 by lack of small-animal models with which to explore many aspects of the disease. This need was satisfied in part by the work of Armstrong and others. However, the diversion of scientific workers to the immediate tasks of World War II suspended progress for the next five to six years.

The most important act of the postwar period which led to the rapid evolution of the polio field was taken by the Foundation shortly after the war ended. After assessing the state of the art at that time, the decision was made that saturation support of the nation's best virologists was required so that, in addition to furthering the general field of virology, they could give some consideration to the special problems of polio.

The general appreciation that more than a single agent was involved in polio causation was resolved by a coordinated collection and study of approximately 1,000 viral isolations from poliomyelitis cases. It was determined that paralytic polio could be caused by agents which antigenically can be grouped into three, and no more than three, types. This was a monumental, highly coordinated task involving the use of thousands of monkeys, and was completed by Bodian in 1949.

Perhaps more important, Enders in the same year adapted the now advanced field of tissue culture to the problem of the study and production of viruses. This latter tour de force made a practical viral technology available for the first time to polio and other workers.

It was now feasible (figure 7) to mount a vigorous and purposeful program in the fields of diagnosis, pathogenesis and epidemiology of the disease, on the one hand, and vaccine development on the other. Both of these general fields advanced simultaneously, in part as a managed program, in part as independent activities lacking central management. In retrospect, each activity, whether directed or undirected, is seen to have been essential for ultimate success.

The choice in the vaccine development portion of this overall effort was to emphasize, coordinate and fund, again to saturation levels, the production of an inactivated viral vaccine, which came into being as a reasonable certainty about 1953 and into general use around 1955. As you know, this vaccine has been largely replaced by an attenuated viral vaccine of a later development that had its beginnings in the early 1950's and culminated in a generally accepted vaccine toward the end of the decade.

As I will point out later, the decision of the Foundation to throw its resources behind the development of an inactivated vaccine markedly increased the difficulties and greatly protracted the time required to develop the generally accepted polio vaccine we have today. Such acceptance is reflected best in the production figures of U.S. industry. A recent analysis expresses the vaccine production as follows, in terms of immunizing courses produced: 1.3 million for the inactivated Salk vaccine, 14.0 million for the attenuated Sabin vaccine.

As I see it, then, there were three phases in the overall development of polio vaccine. I have outlined them in figures 8, 9 and 10, which reflect both scientific progress and administrative judgments.

Phase I included the following:

Immunological means constituted a practical solution to the polio problem, 1933.

Present knowledge was inadequate for solution of the problem, 1936.

Techniques utilizing physical barriers (i.e., nasal sprays) were impractical, 1940.

Finally, the general scientific base was judged to be inadequate for a programmed development effort, 1940-1945.

Phase II:

It was decided that a program of saturation support for virology was indicated, 1946.

Polio is caused by three agents, 1949.

The phenomena of the disease were rather completely defined by 1952.

Tissue culture advances provided a practical means for the solution of most of the virological problems, whether for disease diagnosis and study or for viral production.

Phase III:

Vaccine development was now deemed possible, 1950.

Success of vaccine development was too uncertain to lessen the saturation support for virology.

The preferred technique selected for the vaccine development program was inactivation of the polio virus by formalin.

By 1953 an effective vaccine seemed feasible. Accordingly, the field trial was undertaken in 1954 and the vaccine put into general use in 1955. The problems that arose during the introduction of the vaccine were due to an inadequate science base.

Some scientists believed that a better vaccine was possible through the techniques of viral attenuation. This latter vaccine, however, was delayed in its development due to an inability to conduct controlled studies within the United States.

Some of these judgments involved in the above course of events were made by the community of scientists, some by a support agency having a capability of modulating and hopefully accelerating the development of knowledge in a desired direction.

The essential steps by the Foundation related to their decision to provide broad support for virology (1946); their coordinated program of strain definition (completed by 1949); their decision that a vaccine development program was feasible (about 1950); selection of the inactivated virus as the preferred choice for a vaccine (about 1952); assurance of support for full development (about 1953); and finally, the judgments that the vaccine (inactivated) was ready for field trial and then distribution.

The consequences of this series of decisions made by the support agency were three.

1. The final inactivated vaccine that was distributed for general use required redesign of production methods and redesign of safety testing within weeks after its introduction. This demanded redefinition of the fundamental concepts upon which both inactivation and safety testing were based. In other words, the development had outrun its science base, and a substantial number of vaccine candidates were placed at serious risk.

2. The late observation that at least one simian virus (SV-40) was inactivated at a slower rate than the polio virus was not recognized for many months. This virus was a live viral component of an otherwise killed viral vaccine. Entering the vaccine production system via the monkey kidney tissue used in polio virus production, it was capable of producing tumors in experimental animals. Fortunately, once recognized, elimination of the hazardous virus in the production and testing process was relatively simple. SV-40 was one of a number of monkey viruses that were not recognized as potential hazards at the time the inactivated vaccine came into general use, and its discovery as a potential hazard is another example of how the vaccine development program outran its science base.

3. The selection of the inactivated product as the viral agent of choice greatly delayed what now appears to be the definitive product, the Sabin attenuated viral vaccine. The delay was in part a problem of funding parallel developmental activities. But more importantly, the availability of a reasonably effective vaccine (Salk) precluded testing the effectiveness of the newer attenuated vaccine in the U.S., for this would have meant withholding a proven agent from a portion of the susceptible population. It was for these reasons, and with substantial initial criticism by U.S. scientists, that Sabin arranged for his initial field trials in Russia and Koprowski for his trials in Africa.

The major decisions that permitted the successful development of the currently accepted vaccine were two: (1) It was decided in the immediate postwar period to provide saturation support for virology of an undirected nature, and (2) it was decided that vaccine development of an inactivated agent was to be financed by additional funds and not by a diversion of funds then available for the support of undirected activities.

Now—to return to science of today—to its Federal support and the capability of Federal agencies, particularly NIH, to intervene in the normal development of a science field in order to accomplish its specifically defined objectives:

The categorical structure of NIH is well suited for such intervention, and continuously holds the disease problem before the participating scientists.

Whereas the rapid development of NIH support from 1956 to 1964 was largely devoted, as an immediate goal, to developing a broad, sophisticated base for academic science, taking into account the health and vigor of both the scientist and the institution in which he resides, NIH has long been responsible for managed programs aimed at the solution of important health problems.

There has been an increase in programmed activity in recent years, and if the broad scientific base is as effective as we believe it to be, there will be an increasing number of such opportunities, but hopefully with continued support of undirected and undifferentiated science.

The undifferentiated growth of the biomedical sciences, with its mix of applied and fundamental, has a strong internal logic. If this is interfered with, there must be a full appreciation that (1) the goal is important, (2) the science base is adequate or can be made adequate as part of the organized effort, (3) the losses which may accrue from mounting the programmed effort are counterbalanced by the prospective gains, and (4) developmental work is in itself a hazardous process, at times costly of dollars and manpower and without assurances of success.

In the past our various institutes have performed with varying degrees of excellence in accepting and developing major advances of a practical nature. On balance, and from a less than objective point of view, I believe overall performance has been excellent but can be improved.

Finally, the health and vigor of the biomedical sciences, their coupling with the educational process, their extension geographically into areas of scientific deficiency, and indeed the progressive emergence of new practical opportunities—all these depend on the maintenance of a broad and balanced base of undifferentiated science.

Figure 1

USUAL VACCINE DEVELOPMENT

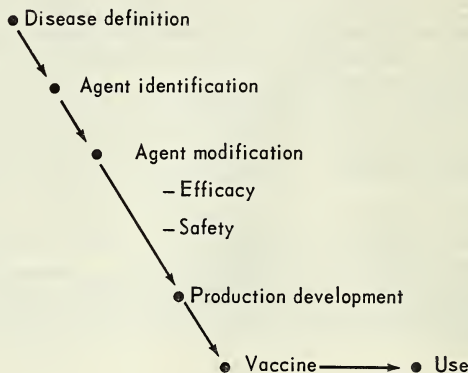


Figure 2

POLIO VACCINE DEVELOPMENT

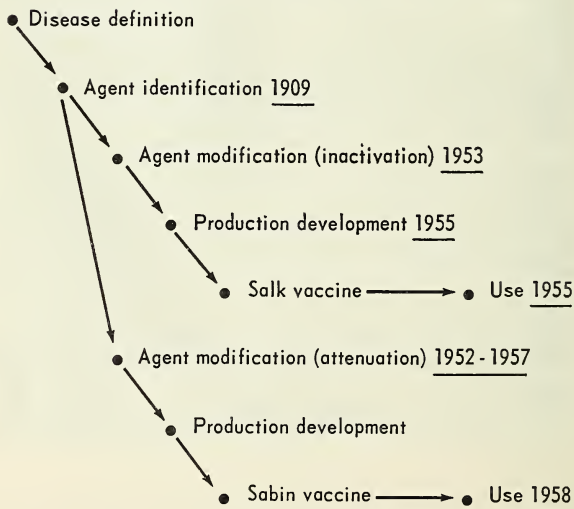


Figure 3

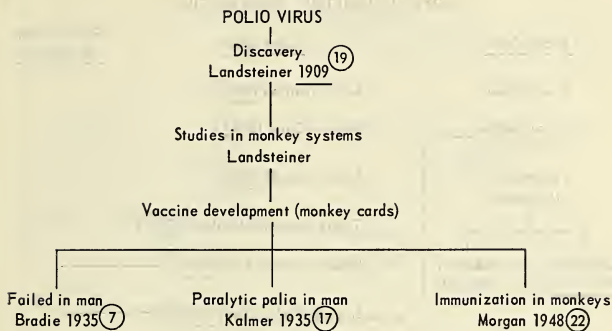


Figure 4

BODY OF INFORMATION: GENERAL VIROLOGY

Discovery of viruses and relation to human disease

Pasteur 1881⁽²⁴⁾

- Description of viral diseases
- Development of viral vaccines

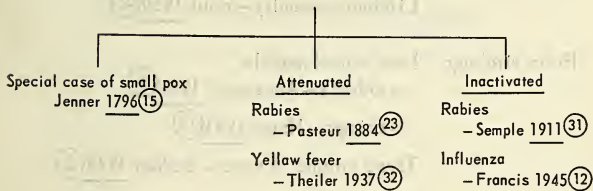


Figure 5

BODY OF INFORMATION: TISSUE CULTURE

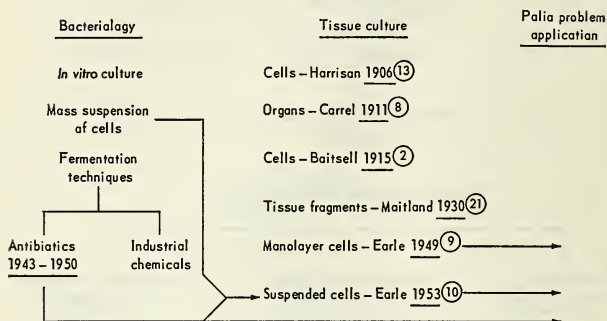


Figure 6

BODY OF INFORMATION: POLIOMYELITIS

Pathogenesis	Human carriers – Kling 1912 ⁽¹⁶⁾
	Nonparalytic infections – Paul 1932 ⁽²⁶⁾
	G.I. entry – Sabin 1941 ⁽²⁸⁾
	Viremic phase – Bodian 1952 ⁽³⁾
	Lifelong immunity – Paul 1950 ⁽²⁵⁾
Polio virology	New animal models
	– rodents – Armstrong 1939 ⁽¹⁾
	– chimps – Howe 1941 ⁽¹⁴⁾
	Three strains of virus – Bodian 1949 ⁽⁵⁾
Tissue culture	Practical virology – Enders 1949 ⁽¹¹⁾

Figure 7

POLIO VACCINE DEVELOPMENT

Practical virology – Enders 1949⁽¹¹⁾

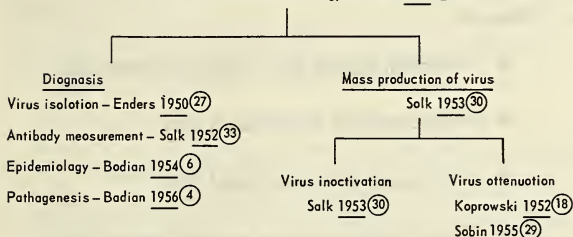


Figure 8

POLIO VACCINE DEVELOPMENT

Phase I

- Immunological approach practical 1933
- Present knowledge inadequate 1936
- Physical barriers (nasal) impractical 1940
- Scientific base inadequate 1940 – 1945

Figure 9

POLIO VACCINE DEVELOPMENT

Phase II

- Saturation support for virology indicated 1946
- Polio caused by three agents 1949
- Disease definition completed 1952
- Tissue culture provides practical means 1949
 - for disease diagnosis and study
 - for virus production

Figure 10

POLIO VACCINE DEVELOPMENT

Phase III

- Vaccine development now possible 1950
- Undirected, saturated support to continue
- Preferred technique – inactivation
- An effective vaccine available 1953
 - field trial 1954 | Problem – inadequate
 - general use 1955 | science base
- A better vaccine thru attenuation
 - field trial | Problem – lack of
 - general use | U.S. controlled studies

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COLLATERAL INVESTIGATION IN DEVELOPMENT

Senator HILL. Give us one of those examples.

Dr. SHANNON. The whole story, basically, was built on a retrospective study of the emergence of the polio vaccine. I attempted to show how collateral lines of investigation, not directly related to the activity aimed at the development of a vaccine, had to come to fruition before it was possible to proceed to the development of the final product. I tried to analyze this entire process as best I could from a relatively unprejudiced point of view.

I think it shows (1) the essential nature of having a broad science base for development, (2) the inability to anticipate all the collateral knowledge one needs for the step-wise development, and (3) how, when one caps the crown with a great achievement, it will usually be because of a combination of factors—some of which one controls, others which are determined by the progress of science generally—that permits this final step to be taken. The lessons to be drawn are largely those that relate to such concepts.

Development work is very costly in both resources and personnel. In the absence of a sound scientific base, it is likely that the effort will be unprofitable. Finally, an unprofitable effort of a purely applied and purely developmental activity yields little in the way of information that enriches the entire background of collateral areas of science.

Senator COTTON. Mr. Chairman, could I ask a couple of quick questions at this point?

Senator HILL. Go right ahead.

PRIVATE RESEARCH CONTRIBUTIONS

Senator COTTON. I know it is impossible to catalog, segregate the different lines of endeavor in the vast field of medical research, but certain fields have been the subject of constant campaigns for years, such as research in cancer, tuberculosis and heart. They have been longstanding efforts, with those particular endeavors receiving contributions from various sources, including foundation grants, solicitations and drives.

What I am getting at is this. The various foundations, it seems to me, are more and more devoting their financial contributions to sociological, and sometimes almost political, reach. I have the impression that the sources of nongovernmental contributions have been somewhat depleted by the turning away from medical research of many of our big foundations. Is there any foundation for that impression?

ASSOCIATIONS

Dr. SHANNON. Senator Cotton, I would like to answer that question in two parts. I will deal with the foundations later, and I will tell about the association first. This chart (No. 4) is very pertinent to the question posed. It shows the support of medical research by the Federal establishment, by industry and other non-Federal sources in these diagrams.

1950 MEDICAL RESEARCH

The first point I would like to make, to come back to what I said earlier, is that the large percentage increase in medical research—that is, the growth between 1950 and 1967 of research in the biomedical sciences from 6 to 10 percent of all research and development—is largely attributable to the very low and very inadequate base during the index year. That is the first point.

The second point I would like to make is that in 1950 the bulk of the expenditures by the Federal Government—which was substantially less than those by voluntary agencies—were funds that were expended in its own labs; the National Institutes of Health, the installations of the Veterans' Administration, the Army at Walter Reed, the Navy, and the like.

During the 1950's, when the cost of education was going up and absorbing all of the funds for the educational process leaving nothing for research, the Federal Government entered the field in very dramatic fashion and, I might say, primarily because of the actions by the Appropriation Committees in the House and Senate. I think it had its impetus from Mr. Folsom in 1955 and 1956, but the character of the action was largely a congressional character. Now there is a very large contribution from the Federal Government.

CONTRIBUTION BY INDUSTRY

On the other hand, if you take the individual elements, you will see that the contribution of the industrial enterprise has expanded almost as dramatically as has the Federal component. At the present time, of all biomedical research, industry supplies roughly 25 percent of the total dollars.

The bad situation is the limited contribution made by all other sources of funds, which totals only \$240 million. This is the aggregate expenditures of States, municipalities, voluntary associations—such as American Cancer, American Heart—and all endowments of the universities. This highlights the importance of our looking at the terms and the conditions by which we make funds available to academic institutions if the Federal Government is not to dominate the research of the academic world which must subserve a broad range of social purposes.

VOLUNTARY AGENCY ACTIVITIES

I do not believe that the voluntary agencies, such as the American Cancer Society, the American Heart Association, and the like, have changed their guidelines since the day they were established as national entities. They have always carried on two general types of activities. One was carried on by the national association centrally, the other by the chapter locally. They always have had three purposes. One is public education, the second is professional education, the third is the support of research.

AMERICAN CANCER SOCIETY EDUCATIONAL PROGRAM ON RELATIONSHIP OF TOBACCO
SMOKING TO CAUSATION OF LUNG CANCER

Now there is one activity that might be called a behavioral enterprise. The American Cancer Society has taken a very strong view on the relationship of tobacco smoking to the causation of lung cancer, and has launched a strong educational campaign in this particular area. I think this is the only area in which the volunteer agencies have attempted to modify public habits.

HEART ASSOCIATION EDUCATION EFFORT ON OVERWEIGHT HAZARDS

To a lesser extent, the Heart Association has tried to educate the American people on the hazards of overweight, more particularly the hazards of a high fat content in diets. But this is a very low-key program, and is not to be compared to the American Cancer Society's program on smoking and health.

USUALLY HIGHLY PROFESSIONAL ACTIVITIES

Otherwise, the bulk of their activities are highly professional in nature and relate to research, professional education, and general public education. I think the American Cancer Society spends more money trying to alert the Nation as a whole to the 10 danger signs that should make one suspicious of a new growth than any other single activity.

DESIRABILITY FOR INCREASED PRIVATE AND FOUNDATION SUPPORT
FOR MEDICAL RESEARCH

Senator COTTON. I am not in any way seeking to detract from the importance of what they do, but the Government is asked to play an immense role as well.

I am for this, and I think I have supported Senator Hill rather loyally in his outstanding efforts for it. We want to spare every single dollar that we legitimately can to this field of research. I sit on another committee, however, where we have been holding long hearings in the very fine field of educational television. There, Carnegie Foundation comes in and tells us what it is prepared to do, and what it is prepared to spend. The Ford Foundation comes in and tells us the extremely substantial sums that they are ready to devote to this very worthy cause.

As I sit up there in the Commerce Committee and listen to these foundations come in and tell us what they want to do in the field of educational television, and as I recall their coming in and telling us what they are doing financially in the matter of civil rights and other social situations, and then as I come down here and listen to the pressing demands for saving life and prolonging life and giving courage and comfort to the afflicted, and for making life useful by what you are attempting to accomplish, I wonder if more governmental dollars could not be targeted to the new and challenging fields in which you are working, if we could have a little more active support from the private sector and from these foundations. I have the impression they used to do more for this field of research than they are doing now, but that they have gone into other fields which may be worthy but perhaps not of the same significance in terms of human life. I hate to see this happen.

FORD FOUNDATION POLICY

Dr. SHANNON. Senator Cotton, it will take a longer time than is available to collect for inclusion in the record contributions of the major foundations to the medical sciences. However, I may say that the Ford Foundation, as a matter of policy, has said, since the initiation of the foundation, that they would not enter the field of the medical sciences but would concern themselves more with problems of social import, however one defines it.

ROCKEFELLER, CARNEGIE, AND COMMONWEALTH FOUNDATIONS

The Rockefeller Foundation, the Carnegie Foundation, Commonwealth Foundation are concerning themselves more and more with the educational professions, rather than with support of the research. The Rockefeller Foundation, as a matter of policy, is now focusing its attention on some of the problems in Africa rather than some of the problems in the United States.

Now these reflect quite mature and very positive foundation decisions. From the beginning, the Rockefeller Foundation has espoused the view that the funds with which that foundation was set up were derived on a worldwide basis and should be expended on a worldwide basis. If you examine the activities of the Rockefeller Foundation even in its early years, you will find many of them in Malaysia, India, Latin America, and, indeed, in the European countries. They find now that, with the limited funds they have available, they can have a profound impact, particularly on medical education, in Africa. Whereas, if they were to use those funds domestically, in the face of the figures we have just been discussing, they would not have enough impact or achieve enough to satisfy their board of trustees.

So that I think that they fully support the entrance of the Federal Government into very broad support of medical sciences, feeling that the problems, the demands, the opportunities are so great that it is beyond the capability of private sources to support. We feel that they are extraordinarily supportive of our activities without at the same time being able to contribute dollars in support of them.

INCREASING GOVERNMENTAL FINANCING OF MEDICAL HEALTH RELATED RESEARCH

Senator COTTON. That answers my question. It is about what I expected. I am not critical of their activities. It seems, however, regrettable that the research field is being more and more placed in the lap of Government financing.

Dr. SHANNON. Senator Cotton, I agree completely. This chart No. 5 illustrates the point you have just made. This deals only with health-related research instead of total research and development.

Total expenditures on medical research comes to \$2.3 billion. The National Institutes of Health and other Federal agencies account for 65 percent of that total. That "all other," which includes foundations, amount to 10 percent. Industry we applaud; but it provides 25 percent of medical research funds and expends 28 percent. This is as a result of a limited contract operation in the medical sciences by industry.

But industry, on the whole, does not influence the academic world; it is not a major source of our scientists. It doesn't influence the program area in which we expend the bulk of our funds.

We are really dealing with the nonindustrial area that has the 75 parts of the funds that come from all nonindustrial sources.—Federal, State, municipal, foundations, and university endowments. Sixty-five of those 75 parts come from the Federal Government. This large component, if not handled very maturely and very carefully, could have a destructive effect on the place where the bulk of those funds are expended—the universities.

GOVERNMENT FUNDS PRORATION

In terms of performance of research, the Federal Government spends 16 percent of total medical research funds within its own laboratories, industry accounts for 28 percent, and 18 percent is in research institutes, hospitals, nonacademic institutions, and the like. More than one-third (36 percent) of all medical research is performed in academic departments, the places that have a three-fold responsibility for research, education, and service.

We are very glad to see that in this year's budget, for the first time, some of these funds for research are being balanced by more adequate support of the educational function. We feel that, if this educational function is not supported in parallel with research, the imbalance, in the long run, could well destroy our institutions.

Senator HILL. Doctor, I had a letter from the dean of a medical college yesterday in which he spoke about the Partnership between the Federal Government and the medical colleges, so to speak.

(Discussion off the record.)

INCREASE IN PUBLIC CONTRIBUTIONS TO ORGANIZED ASSOCIATIONS

Senator COTTON. Are the contributions from the associations, the money that we get from the public, for cancer, for TB, for various other causes that are backed by organizations on the increase?

Dr. SHANNON. They are on the increase; yes, sir. I will be very glad to submit for the record a summary of those increases.

Senator COTTON. I wish you would.

Senator HILL. We will have those appear in full in the record.

(The summary follows:)

The following table is based on information collected by the National Information Bureau which was published in the *New York World Journal Tribune* on April 23, 1967.

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1739

Organization	Total income, 1966	Percentage increase or decrease over 1965 income	Allocation to research, 1966	Research as percent of expenditure, 1966
American Cancer Society.....	¹ \$52,938,700	+16	¹ \$12,714,100	¹ 24
American Heart Association.....	36,451,600	+20	11,231,990	31
National Tuberculosis Association.....	34,649,000	+8	1,533,500	4
National Society for Crippled Children & Adults.....	27,225,200	+40	295,500	¹ 1
National Foundation.....	23,867,900	-12	2,380,800	10
United Cerebral Palsy Association.....	¹ 14,700,000	+11	² 878,200	¹ 6
Planned Parenthood Federation.....	¹ 13,085,000	+196	¹ 162,000	¹ 1
National Association for Retarded Children.....	12,000,000	(³)	¹ 194,300	¹ 2
National Association for Mental Health.....	¹ 8,600,000	+26	571,500	¹ 7
Muscular Dystrophy Association.....	¹ 7,300,000	(⁴)	1,789,500	¹ 25
Arthritis Foundation.....	6,247,800	+25	1,667,400	27
National Multiple Sclerosis Society.....	4,550,000	+5	1,000,000	¹ 22
American Foundation for Blind.....	3,379,900	-----	223,000	7
Damon Runyon Fund (Cancer).....	2,654,700	-----	1,534,600	58
National Cystic Fibrosis Foundation.....	¹ 2,500,000	-----	¹ 1,200,000	¹ 48
National Council on Alcoholism.....	2,352,000	-----	80,000	¹ 3
Seeing Eye.....	1,991,400	-----	295,200	¹ 15
Leukemia Society.....	1,566,700	-----	525,500	¹ 34
American Diabetes Association.....	1,529,600	-----	67,300	¹ 4
National Fund for Medical Education.....	1,300,000	-58	(⁵)	-----
National Society for Prevention of Blindness.....	1,320,000	-----	² 99,200	¹ 8
Epilepsy Association of America.....	¹ 1,285,500	-----	119,400	¹ 9
National Hemophilia Foundation.....	¹ 1,100,300	-----	¹ 150,000	¹ 14
National Kidney Foundation.....	1,009,000	-----	546,000	¹ 54

¹ Estimate.

² National headquarters only.

³ Not available.

⁴ Not given.

⁵ Not designated.

SUGGESTION OF LEGISLATION PERMITTING TAXPAYERS TO DESIGNATE ALLOWANCES FOR MEDICAL RESEARCH

Senator COTTON. If this bill that we are discussing in the Senate—permitting each taxpayer in the country to designate on his tax return that \$1 of his taxes be devoted to reforming Senators and Congressmen and financing political campaigns—could be translated into authority for every taxpayer to designate that 50 cents of his taxes be devoted to the medical research this committee is helping to finance, the response would be almost unanimous, would it not, on the part of the people?

Dr. SHANNON. I am sure it would. But we still would come here to ask for more money.

Senator COTTON. And the politicians would still go to their friends for more money. It occurs on the floor of the Senate every year that we must fight to hold the line on appropriations for this objective when it must be weighed against appropriations for other worthy causes.

If the people had a chance to designate a little, it would give us a push, would it not?

Dr. SHANNON. Yes; I think it would. I have something that bears fairly directly on that on a chart.

I know I am taking up a great deal of your time—

Senator COTTON. I am delaying it. I am sorry to do so when I have to leave in a short time.

BILLION-DOLLAR VALUE

Dr. SHANNON. Senator Cotton, I saw a television review of the NASA space program. I think it was 2 weeks ago Sunday. They had

Wernher von Braun on. He made a statement that troubled me. He said that one of the major differences between working in the United States and working in Germany is that he now knows what a billion dollars is. He said he had no conception of what a billion dollars was in Germany. It bothered me, because a billion dollars is about the order of the magnitude of our budget. When I think of a billion dollars, I don't know what a billion dollars is either but—if you can call the acquisition of new knowledge a purchase and if my university colleagues don't berate me for using that term—I think I know what a billion dollars will purchase.

I had this chart drawn to explore that with you. A billion dollars, taking construction and variety of other things out of our budget, is about what we spend in support of our operations. It is spread over 12 appropriations, the main ones of which are for the categorical Institutes. Of the billion, \$164 million goes to support the activities of the Heart Institute. Senator Cotton, I still don't know what \$164 million is, either. That is too much for me.

HEART INSTITUTE TOTAL ACTIVITY

I should therefore like to take the Heart Institute's total activity and break it down into research, into training, into the funds that go for institutional support, and a number of other things that are largely in the contract area. This gives you a figure of \$122 million for research, which is still a very large figure.

Senator HILL. Doctor, when you say "institutional support," will you amplify that a little bit?

Dr. SHANNON. This is the general research support program which is operated by contributions from each appropriation, on a percentage basis, which are then pooled centrally and used for formula grants. Dr. Kennedy will discuss that activity with you at the end of the categorical hearings.

MAGNITUDE OF EFFORT

You are still dealing with large figures. Let us take a look at what the Heart Institute is doing to try to solve problems of hypertension and atherosclerosis. These two things together cause roughly 50 percent of all the deaths in the United States. We are trying to deal with heart failure and shock regardless of cause; with congenital heart disease, disease we inherit at birth; the increasing problems in the interplay of the heart and respiratory systems; a whole array of things that relate to infectious agents, and the like; and the systems on which the normal function of the vascular system depends.

HYPERTENSION EXPENDITURES

Now we are beginning to get down to figures that I can understand. We are spending \$15 million for hypertension. Let us take a look at what we are doing with that money. We find it is broken down into three categories. For etiology, which is the study of causes, there is \$9 million; for therapy, which is treatment, there is \$4 million; and for diagnosis there is \$2 million.

The development of therapeutic agents over the past 10 years has reduced hypertension by 50 percent in all age groups.

In the age group of 45 to 65, it has reduced death due to stroke by 20 percent. The bulk of this is associated with hypertension. But this is a holding operation in that these therapeutic agents neither prevent nor cure the disease.

In the next stage, while we continue to conduct the holding operation to prevent further inroads of hypertension, we must find the cause and we must find a way to prevent it. I want to translate to you in common terms what \$9 million—

FINANCING OF OEO HYPERTENSION

Senator COTTON. Before you leave the \$15 million and hypertension, you might be interested in being reminded that we are contemplating spending a little more than \$15 million dealing with another kind of hypertension. Over \$15 million is being contemplated to be spent by the Office of Economic Opportunity for free legal advice to the people of this country and so far the pilot projects have indicated that 80 percent of that advice is how to get a divorce. That is another kind of hypertension. Yet we go ahead and spend that \$15 million and then we have to brace our feet and fight to get \$15 million to take care of hypertension medically.

PROGRAM FUNDING PAUCITY

Dr. SHANNON. Senator Cotton, reduced to practical operational terms this means that, for studying the causation of a disease that affects 15 percent of all individuals beyond the age of 25, we are supporting 150 full-time scientists throughout the entire Nation.

I have gone through this exercise because, as I started out by saying, I don't know what a billion dollars is. I have tried to break it down until you get to programs that are amenable to our understanding in terms of what the purposes are, the order of magnitude of the activity, and how we deploy our resources. I think that you come to the conclusion that, as I said when I started, there is not money to burn. These programs are not overstuffed with dollars; they are scarcely on an adequate maintenance diet. That is the only point I wanted to make, sir.

UNFUNDED REQUIREMENTS

Now, I think, Senator Hill, with the generalities of this presentation, I would just like to point out that there are some unmet needs with which we must concern ourselves, if not this year, then the following year.

Senator HILL. Go ahead.

Dr. SHANNON. There is the problem of institutional stability which results from the figures that I mentioned. The problem of creating stability for scientists both in the Government and in the universities.

There are areas of science that are deplorably lacking in support. I would like to mention a few: The problems of human development; research on the problems of the aged; mounting a vigorous attack on an increasingly hostile environment; providing for a more rapid development, and, indeed, for a sound science base, for the heart disease, cancer, and stroke program outlined by the President's Commission. One could go on and mention a number of others.

MAINTENANCE OF 1967 LEVEL

I think that the budget before you will, indeed, hold our current programs reasonably well at the 1967 level. If it has done nothing more than to make us reexamine our programs from somewhat different points of view, such as I have tried to trace with you today, then I think that it serves a useful purpose. I can only hope that our national and international commitments in other areas, essentially as they may be at the present time, will not unduly delay our getting on with the further development of the program that will have, and indeed already has had, a broad impact on every family and every individual in the Nation.

Thank you very much, sir.

PUBLIC INFORMATION PROGRAM

Senator HILL. Doctor, you have brought us a very fine and very enlightening statement, and most challenging. There are many questions that occur to me to ask you, but we are going to have the heads of the various institutes. They will want to do some talking, won't they?

Dr. SHANNON. I am sure they will.

Senator HILL. I will ask each one of them. I can't help but commend you strongly on the presentation you have made here today. I think it has been very, very fine.

Let me ask you this this question, Doctor. At last year's hearings we discussed your public information activities. The committee report asked the institutes to undertake a more vigorous and imaginative public information program dedicated to the public understanding of their activities.

Has anything been done about this?

Dr. SHANNON. Senator Hill, a lot has been done but I am not wholly satisfied with it. I don't think that we have found the formula for doing what I agree with you should be done. We have instituted a number of activities. These will be summarized in a special report I would like to submit to you, but I must confess that I don't think we have licked this problem.

(The report was later received and appears beginning on p. 2143.)

RADIO SPOT COVERAGE

We have under consideration a number of things now that we are a little loath to undertake for a variety of reasons, including fairly tight budgets for our direct operations.

This activity is the responsibility of Mr. Johnson who is in charge of our Office of Research Information. One of the programs that he was most anxious to mount was similar to the type of spot coverage that one sees so frequently on television, but he wanted this on radio because the points covered don't have to have visual aids, they can be explained very simply. He gave me some platters that had been developed by an outside consultant and a couple of tapes that had been proposed to him. I was most unimpressed. Through our own facilities, we are now producing scripts and platters, especially for radio. Over 1,000 stations have asked for these on a continuing basis. I listen to one of the music stations fairly regularly. I notice that they are now beginning to interject these short capsules of information, perhaps a minute or a minute and a half, on the activities of NIH. This is one of

the most widely listened to radio stations in the Bethesda area. Obviously there is local interest, because that is where we are. When we finish these hearings I want to see whether we can't build on this element of our information program.

This will not solve the whole problem. I have a feeling that we haven't yet come up with a series of well-balanced information programs that are acceptable to us as a professional organization which will also be informative to the public.

Senator HILL, I hope I have a better story for you next year.

Senator HILL. You think by next year you will have?

Dr. SHANNON. I think so. There has been a great deal of work on it this year. I think we are still pretty fuzzy as to how to proceed on a course of action.

CONTRIBUTIONS TO ORGANIZED ASSOCIATIONS

Senator HILL. We speak about the private associations and I am very strong for them and I highly commend them for what they do. But you see, they raise their funds by voluntary contributions. So if they have a meeting of a local chapter or local State meeting, naturally they tell about the progress which has been made, but they don't say anything about what NIH has done, because they have to raise their funds by voluntary contributions.

COLLECTION OF NEWS ARTICLES

Dr. SHANNON. Senator Hill, I have been collecting, because of the comments in the Senate report last year, the news articles that describe solid advances either resulting from work done by the National Institutes of Health or from work supported by the National Institutes of Health. I have asked Mr. Johnson not to send them in day by day, but to collect them on a weekly basis. Quite frankly, I am surprised at the large amount of news coverage we are getting today, simply because the work we do is good, the work we support is good, and the advances are newsworthy. Our problem is to maintain the spontaneous interest of the news media without undertaking a Madison Avenue approach to create an image that, in the final analysis, does not truly reflect the activity. This is our problem, sir.

Senator HILL. But you are continuing to work on this matter?

Dr. SHANNON. Yes, sir.

ANTICIPATED PROGRAM DEVELOPMENT

Senator HILL. Do you think you will have a more favorable report next year than you can give us at this time?

Dr. SHANNON. I think so; yes, sir.

Senator HILL. Because you are really working on it?

Dr. SHANNON. We have spent a lot of time on it this year. Some of the things we have discussed, some of the things we have inquired into, and some of the plans we have made will come at a decision point this summer or early fall. I think we will have an action program next year, more oriented to each of the institutes and more meaningful than we have had in the past. I just would be unwilling to go beyond that now, sir.

Senator HILL. But you are working on it?

Dr. SHANNON. Yes, sir.

Senator HILL. I did not mean to be critical of the private associations. As I say, they have to raise their money by private contribution. So naturally when the speaker tells about the advances that have been made and what they have done to try to bring about these advances, they do not stop to say anything about what NIH has done, because the reaction might be, "Well, if my tax money is doing this, why should I be making this contribution?" That would be a natural reaction.

Dr. SHANNON. Indeed it is, and I would rather not comment, sir.

SENIOR SCIENTIST RECRUITING AND RETENTION

Senator HILL. Doctor, you still, do you not, have problems in recruiting and retaining your senior scientists?

Dr. SHANNON. Senator Hill, indeed we do. This has been a very depressing year.

Senator HILL. Has been?

Dr. SHANNON. Yes.

Senator HILL. Exceptionally depressing?

TRANSFER OF PROGRAM SCIENTISTS TO ADMINISTRATION

Dr. SHANNON. What I have had to do in order to fill two critical positions—these are two scientific directors' jobs—is to take two people out of research and plead with them to accept broad administrative responsibility for their total operation. We don't gain by doing this. These people are superior people. They will do a job at least as good as anybody drawn from the university world. But we don't enrich our environment by taking somebody out of the clinic or out of the laboratory and putting him behind a desk.

We have analyzed in great depth a very critical situation that we face in the coming 2 years. The operations of our personnel system will cause us to lose—or at least to get application for retirement from—as many as 125 senior scientists in the coming 2 years. There are some 42 of them who, we feel, cannot be replaced because of our limited ability to recruit from the academic world.

Senator Hill, as you know, and as I have said before, I think that any operation—regardless of its excellence, regardless of its diversification—that must depend wholly on growth from within carries the seeds of its own destruction. I will say further that it is my conviction that the entire medical research and development program of the Nation is imperiled today. If a remedy for the problem of recruiting senior program operators is not found by providing some means of adequate recompense, then the efficiency and effectiveness of the total operation will diminish strikingly.

I will say, in relation to our operation in Bethesda, that there is no doubt in my mind that if we can't find some means of broad relief, the excellence we are so proud of today will become the mediocrity of tomorrow. Senator Hill, I would emphasize that this is not a question of appropriations. We are dealing with minute amounts of the appropriation. I would say that the savings to the Federal Government of our being able to pay adequately for good leadership would be many, many times the increased cost of these limited numbers of salaries.

Now, Senator Hill, I realize that I have said this before. My comments are not said in panic although they are perilously close to being that.

Senator HILL. In other words, the situation is very serious?

Dr. SHANNON. Yes.

PERSONNEL SYSTEM DEVELOPMENT AND SALARY CEILINGS

Senator HILL. Has the Department of Health, Education, and Welfare or the Public Health Service given very serious consideration to this matter?

Dr. SHANNON. They have indeed, Senator Hill. But the normal development of the new personnel system that has been proposed by the Surgeon General, as it now stands, will not solve our problems which are largely those of salary ceilings. The normal schedule of putting such a new program into effect—however important it may be for the health services area—will neither solve our problems in the aggregate nor solve them in time.

This may turn out to be a classic example of locking the door after the horse has fled. I am concerned about what is going to happen during the next 2 years. I think it unlikely that, by normal procedures, we will get a solution for our problems. I might say that I have discussed this extensively with the Secretary. He agrees completely with our view on the matter. I am sure he would support any device that would tend to remedy the plight we find ourselves in. I can't speak for the Secretary, but I do interpret his attitude as permitting that statement.

Senator HILL. As Secretary of the Department, is he prepared to take the lead?

Dr. SHANNON. He has told me that he is willing to do this, sir.

Senator HILL. He is willing?

Dr. SHANNON. Yes, sir.

Dr. GEHRIG. The Surgeon General joins Dr. Shannon in the concerns that we have. I think it is very evident that the same problem of leadership as that faced by the National Institutes of Health is existing throughout other branches of the Service. There has been considerable effort in developing a proposal for a personnel system. I would agree with Dr. Shannon that I don't think this mechanism will necessarily meet all the needs of the Service. It is, in our opinion, a step forward in providing some increased recompense to leadership.

It certainly is not competitive with what is potentially available for these same people on the outside. I would only underline Dr. Shannon's concern. We share this throughout the Public Health Service and feel that there has to be a very important change in order to make us more adequately competitive than we actually are.

Senator HILL. You agree you have a very serious situation today?

Dr. GEHRIG. We do.

Senator HILL. Something must be done?

Dr. GEHRIG. One of the provisions that has been developed in this proposal is directed toward Dr. Shannon's concern, that is, while any organization of this size has real need to grow their own, if you will, there is also real need to have a mechanism by which we can capture those who have already grown from the outside, either for shorter or longer periods of service within the Federal establishment.

But this is an extremely serious problem, and it is one on which there has been a great deal of thought and effort already applied. There is need for considerably more effort before we reach some better compromise than we have with our present personnel system.

TEMPORARY LOAN OF UNIVERSITY PERSONNEL

Dr. SHANNON. Senator Hill, in the report of the committee last year, you indicated that you would like to see whether we could remedy some of our deficiencies by taking people on temporary loan from the university. This was a recommendation contained in your report. We have done this in the past. We have done it to a greater extent during the past year. We are convinced, on the basis of present experience, that, although such people are helpful for specific tasks to which they can be assigned to for short periods of time, this device cannot be substituted for senior leadership of a seasoned type that is only possible when a man grows in his responsibility.

Senator HILL. Of course this problem has been growing worse and worse each year, has it not?

Dr. SHANNON. Yes; indeed it has.

Senator HILL. You have reached a point now where something has to be done. Isn't that right?

Dr. SHANNON. Yes, sir.

Senator HILL. Neither the Department nor the Public Health Service has come up and offered to the Congress a solution, has it?

Dr. SHANNON. Senator Hill, we have some considerations underway at the present time. I will be very glad to tell you about them personally, but I don't feel free to discuss them in public.

Senator HILL. There is certainly a compelling need for meeting the problem, is there not?

Dr. SHANNON. Yes, sir.

PUBLIC HEALTH SERVICE UTILIZATION OF OFFICE BUILDING SPACE

Senator HILL. Doctor, you will recall we provided some funds last year for a new office building.

Dr. SHANNON. Yes, sir.

Senator HILL. Several years ago, not last year.

Dr. SHANNON. It was 3 years ago.

Senator HILL. I understand that the Public Health Service has taken over several floors of this new building for which we added funds several years ago, is that right?

Dr. SHANNON. That is right. The office of the Surgeon General now has several floors in the office building for which the new building is an extension.

Senator HILL. How is this loss of space affecting the NIH programs?

Dr. SHANNON. To be perfectly frank, Senator Hill, it is causing some strains. We have expressed the view to the Surgeon General—

Senator HILL. The use of that word strain was not suggested by what our good friend Senator Cotton said about divorce, was it?

BUDGET BUREAU DISALLOWANCE OF PUBLIC HEALTH SERVICE REQUEST FOR OFFICE PLANNING FUNDS

Dr. SHANNON. No, sir.

I really feel that the most disappointing thing—and I can say this because it has nothing to do with our appropriation—the most disappointing thing in the appropriation before you is that the proposal of the Public Health Service for planning funds for a substantial office structure to satisfy its total headquarters needs, excluding NIH, fell by the wayside somewhere along the line in the budget process. I fully realize the need of the Surgeon General for space for himself and his staff and his essential functions.

I told Dr. Stewart that, as an operating agency, we have had to fight for space to pull the essential elements of our operating programs in a single geographic area. This is an essential condition for an effective operation.

I have indicated to Dr. Stewart that I felt that only very limited space can be made available for the operation of the headquarters of the Public Health Service on our reservation.

Senator HILL. You requested and the Department requested for this budget some \$2,400,000 for a headquarters building, did you not?

Dr. SHANNON. That was requested by the Public Health Service.

Senator HILL. It was requested by the Public Health Service, it was requested by the Department, too.

Dr. SHANNON. Yes, sir.

Senator HILL. But it was denied by the Bureau of the Budget?

Dr. SHANNON. Yes, sir.

Senator HILL. So it is not in your budget as we have it before us now?

Dr. SHANNON. No, sir.

EFFECT OF OFFICE BUILDING SPACE LOSS

Senator HILL. How much is the loss of space that you have suffered affecting your programs?

Dr. SHANNON. Dr. Stewart has asked for about 7,000 more square feet of space.

Senator HILL. He wants to take what you are now using?

Dr. SHANNON. He has roughly two floors in Building 31 now and wants another 7,000 square feet. To respond to that request, we would have to split off half of the Child Health Institute and put it off the campus.

Senator HILL. Off the Bethesda Campus?

Dr. SHANNON. Yes.

Senator HILL. Where would you put it?

Dr. SHANNON. In rented space, perhaps, in Bethesda.

Senator HILL. What will be the effect on Child Health?

Dr. SHANNON. I think it will operate less effectively.

Senator HILL. And human development, too?

Dr. SHANNON. Yes.

Dr. GEHRIG. Senator, I wonder if I might make a comment.

Senator HILL. Yes, Doctor.

PUBLIC HEALTH SERVICE LOCATIONS

Dr. GEHRIG. This is causing concern for Dr. Shannon and for us. At the present time we occupy two and one-half floors, which is about

27,000 square feet in this building. This has represented housing for about one-fifth of the office of the Surgeon General. This space was largely made available by moving the National Institute of Mental Health, which became a separate bureau, to rented space in Bethesda. An additional 6,700 square feet of space in Building No. 31 is needed during fiscal year 1968 to accommodate some of the elements of the Office of the Surgeon General that must work closely with the Surgeon General and his immediate staff. This additional space will not accommodate any of the units already located in other space.

The entire Office of the Surgeon General is presently located in eight various locations around the city. This has caused us considerable difficulty with the separation of not only the immediate office of the Surgeon General but in maintaining relationships with the other bureaus that are located around the Washington metropolitan area. This is a most difficult problem for us, as it is also for Dr. Shannon.

More important than just the space problems of the Office of the Surgeon General, is this same dispersion which exists in most of the organizational units of the Public Health Service in Washington.

Excluding the National Institutes of Health, the Public Health Service is located in 12 different locations in the District of Columbia and adjacent suburbs of Maryland and Virginia. Nine of these buildings are leased. For example, the Bureau of Disease Prevention and Environmental Control is located at six different sites; the Bureau of Health Services at four sites; the Bureau of Health Manpower at three sites. One can readily visualize the communication problems and loss of efficiency such geographical dispersion creates. A central facility for our operations is a high priority need.

Senator HILL. This budget is not going to meet the problem, will it?

Dr. GEHRIG. No, sir; it will not provide any beginning toward the development of installation where we can bring these components together.

Senator HILL. And the building for which we provided the funds as you said, Doctor, some 3 years ago, it was understood that building was for NIH. Isn't that true?

Dr. GEHRIG. This is correct.

HOSPITAL TECHNOLOGICAL PROGRESS IN HANDLING PATIENTS

Senator JAVITS. Mr. Chairman, may I ask a question?

Senator HILL. Surely.

Senator JAVITS. Dr. Shannon, is there any agency of your Institute that looks into the newest techniques of hospital modernization or hospital operation economies in terms of how long you keep a patient, what you do with him, the sheer technological progress in hospital handling of people?

Dr. SHANNON. Senator Javits, we do some of that in our direct operation. On the other hand, there is another segment of the Public Health Service that has to do with the exercise of the Hill-Burton authority. There is in the appropriation request for that activity \$10 million for research on precisely the things that you have in mind. This is not our responsibility.

Senator JAVITS. It is not your responsibility?

Dr. SHANNON. No, sir.

HEART INSTITUTE GROWTH

Senator JAVITS. I might tell you, too, Dr. Shannon, that I was sponsor, I think it was in 1947 or 1948 when the bill creating the National Heart Institute was passed in the House. I must say it is fantastic to me how this small acorn has grown into a mighty oak.

Dr. SHANNON. Senator Javits, I was intimately involved in that because I was one of the first employees of the National Heart Institute. I came down as a science director. I left industry because of the attractiveness of the opportunity.

I have seen this Institute grow from day one, first as part of the operation and later as Director of NIH. I have seen its influence throughout the land, in our medical schools, our hospitals, and our research institutes.

With the dramatic advances, which I mentioned earlier that are now clearly returning people to normal lives through surgery, through therapy, through a wide variety of techniques, the payoff here has been fantastic.

ANNUAL DEATHS RESULTING FROM HEART AILMENTS

Senator JAVITS. How many deaths do we suffer a year because of heart ailments?

Dr. SHANNON. I just happen to have this in my back pocket. In the aggregate, 989,000 people a year.

Senator JAVITS. What percentage is that of the total?

Dr. SHANNON. That is slightly more than 50 percent of the total.

Senator JAVITS. Of the total death from all causes?

Dr. SHANNON. Yes, sir.

Senator JAVITS. What would that figure have been in your judgment if we had not made the progress that we have made in heart research?

Dr. SHANNON. It is difficult to answer that question categorically.

Senator JAVITS. Let me ask you this.

What was the percentage when we started in the 1940's?

Dr. SHANNON. It was roughly the same, but what has happened is that life has been extended so that you have more candidates for death from cardiovascular disease. The benefits only show up in areas such as hypertension, atherosclerosis and stroke and some of the things that can be remedied by surgical means.

HYPERTENSION DEATH RATE REDUCTION

In hypertension, there has been a reduction in death rate in 10 years of about 50 percent. This is in all age groups.

For stroke—which is a combination of atherosclerosis usually precipitated by hypertension—in the age group 45 to 65 there has been a reduction in mortality rate of some 20 percent during this period.

CARDIOVASCULAR DISEASE DECREASE AND INCREASES

The other figures are clouded by the increase in life expectancy, so one must go to such specific questions as that. In the same period of

time, to give you some other figures, there has been a reduction in rheumatic heart disease of some 20 percent while all other cardiovascular diseases have increased about 20 percent. This is attributable to the increase in lifespan with the disappearance of infectious diseases as killing agents.

Hypertension, stroke, rheumatic heart disease are striking examples of direct benefit regardless of these other factors which tend to enhance mortality rate as the result of increasing age.

COMMUNICATION OF RESEARCH FINDINGS

Senator JAVITS. I have one other subject. My assistant who works on these matters tells me that in the field of education an organizational means has been set up in HEW—known as ERIC—for getting the benefits of advances, technological and other advances, out into the field very rapidly.

What provision is made to get the advances achieved by research out into the field as rapidly as possible and can that be improved?

Dr. SHANNON. Indeed they can be improved. I would like to answer in two parts. In the first place I like to say categorically that the accessibility of biomedical scientists in a university hospital results in a situation where there is very little in the way of laboratory accomplishment that is not immediately applied to the disease within the environs of the hospital.

The problem then is how does one extend the excellence of medical care, the facilities and the resources that are available in these superb university institutions to the places where most medical care takes place; namely, the community and the community hospital.

Now this is being done by two specific techniques. One is the regional medical program that will be described here at some lengths by Dr. Robert Marston. This is part of the National Institutes of Health activity. The other is the reorganization and reengineering of the capabilities and functions, at the community level, of physicians in terms of the resources they will need in order to provide the best services.

Tying these two things together is another element in the regional medical program that addresses itself to the task of formal reeducation of a nature that will make advances available in a simple way to the practicing physicians who are not in constant contact with the work being done within the walls of the university hospital.

There are three programs that are arranged specifically for this problem. One of them is in another bureau of the Public Health Service, two are within our own Bureau.

REGIONAL MEDICAL PROGRAM, ALBANY, N.Y.

Senator JAVITS. You say this can be improved.

How would you suggest this can be improved?

Dr. SHANNON. Senator Javits, I think, one, by utilizing the techniques that were just authorized about a year ago for the establishment of regional medical programs. Two, by frank experimentation, trying to find ways and means and exploring alternative routes for doing it and selecting that which is shown to be superior. Indeed, this is proposed by the Public Health Service as a straightforward endeavor in operational research.

The ongoing program that now has the most immediate chance of direct impact is the establishment of regional medical programs, such, for example, as has just been funded in the Albany area in New York.

This could cover an area from about 20 or 30 miles south of Albany, about 30 or 40 miles west, over into the northern edge of Massachusetts and the western end of Vermont, and go right up to the Canadian border.

Through a variety of techniques that involve exchange fellowships, visiting consultants, educational programs, the development of specialized resources, such as acute coronary diagnostic facilities, the benefits that are available to the patients in the university center in Albany will progressively and very rapidly become available to the people in this large region.

I must say that this is the most advanced region of all regional medical programs that have been evolved today.

ANTICIPATED REGIONAL PLANNING GRANTS

Senator JAVITS. Is there any provision now for extending that? Now that you say it has been proven, what about extending that?

Dr. SHANNON. Sir, this is one of only four operational grants that have so far been awarded. I think I can speak with some conviction about Albany because they had, before the regional medical program was established, some extension into these areas which serve as a basis for the rapid application of the new authority.

But by next fall we will have made planning grants that will cover regions encompassing something like 95 percent of the entire population. These grants are made in such a way as to bring together the professional forces within the designated region in a cooperative activity.

The initial phase, I would guess, requires at least a year's planning before the program can become operational. It is our belief that, before any grants for operations are made, the regional planning group has to develop broad strategy as to how it is going to approach the problems. The operational grant should be part and parcel of the design by which they propose to implement.

Senator JAVITS. So you have provided for it?

Dr. SHANNON. Yes, I think we have.

Senator JAVITS. Thank you.

REGIONAL LIBRARY PROGRAM

Senator HILL. Doctor, too, your regional library program fits right into what you have been talking about?

Dr. SHANNON. Yes, sir.

Senator HILL. I am sure you are working in close cooperation with Dr. Cummings, the head of the National Library of Medicine; is that right?

Dr. SHANNON. Yes, sir.

Senator HILL. Are there any other questions, Senator Javits?

Senator JAVITS. Thank you very much, Mr. Chairman.

Senator HILL. Doctor, you have brought us a splendid statement, a fine statement. We deeply appreciate it. We want to thank you for it very, very much. You keep working on that matter now.



NATIONAL HEART INSTITUTE

STATEMENT OF DR. DONALD S. FREDERICKSON, DIRECTOR; ACCOMPANIED BY R. H. HENSCHER, EXECUTIVE OFFICER; AND JOHN H. REEDER, BUDGET OFFICER, NATIONAL HEART INSTITUTE; DR. JAMES A. SHANNON, DIRECTOR; RICHARD L. SEGGER, EXECUTIVE OFFICER; CHARLES MILLER, FINANCIAL MANAGEMENT OFFICER, NATIONAL INSTITUTES OF HEALTH; DR. LEO GEHRIG, DEPUTY SURGEON GENERAL; G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

NATIONAL HEART INSTITUTE

For expenses, not otherwise provided for, necessary to carry out the purposes of the National Heart Act, **[\$164,770,000] \$167,954,000.**

Amounts available for obligation

	1967	1968
Appropriation.....	\$164,770,000	\$167,954,000
Transferred to "Operating expenses, Public Buildings Service," General Services Administration (space rental).....	-13,000	0
Comparative transfers within NIH.....	-781,000	0
Total.....	163,976,000	167,954,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants:						
Research.....		\$105,996,000		\$106,628,000		+\$632,000
General research support grants.....		(8,943,000)		(10,108,000)		(+1,165,000)
Scientific evaluation and planning.....		(163,000)		(163,000)		0
Categorical clinical research centers.....		(4,500,000)		(4,500,000)		0
Heart cooperative drug study.....		(3,820,000)		(3,820,000)		0
Specialized research centers.....		(800,000)		(800,000)		0
Fellowships.....		6,975,000		7,439,000		+464,000
Training.....		17,525,000		17,696,000		+171,000
Direct operations:						
Laboratory and clinical research.....	402	11,469,000	411	13,135,000	+9	+1,666,000
Collaborative research and development.....	51	16,428,000	51	17,526,000	0	+1,098,000
Biometry, epidemiology, and field studies.....	87	1,590,000	87	1,727,000	0	+137,000
Training activities.....	17	289,000	17	295,000	0	+6,000
Review and approval of grants.....	105	2,571,000	105	2,663,000	0	+92,000
Program direction.....	33	818,000	33	845,000	0	+27,000
Total obligations.....	695	163,661,000	704	167,954,000	+9	+4,293,000
Unobligated balance, reserve.....	0	315,000	0	0	0	-315,000
Total obligations and balance.....	695	163,976,000	704	167,954,000	+9	+3,978,000

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Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	695	704	+9
Full-time equivalent of other positions.....	55	55	0
Average number of all employees.....	687	696	+9
Personnel compensation: Permanent positions.....	\$5,768,000	\$5,846,000	+\$78,000
Positions other than permanent.....	229,000	229,000	0
Other personnel compensation.....	79,000	79,000	0
Total personnel compensation.....	6,076,000	6,154,000	+78,000
Personnel benefits.....	658,000	662,000	+4,000
Travel and transportation of persons.....	275,000	294,000	+19,000
Transportation of things.....	98,000	98,000	0
Rent, communications, and utilities.....	177,000	190,000	+13,000
Printing and reproduction.....	35,000	35,000	0
Other services.....	1,424,000	1,679,000	+255,000
Project contracts.....	16,064,000	17,121,000	+1,057,000
Payment to "National Institutes of Health management fund".....	6,555,000	7,430,000	+875,000
Supplies and materials.....	1,101,000	1,590,000	+489,000
Equipment.....	722,000	958,000	+236,000
Grants, subsidies, and contributions.....	130,496,000	131,768,000	+1,267,000
Subtotal.....	163,681,000	167,974,000	+4,293,000
Deduct quarters and subsistence charges.....	-20,000	-20,000	0
Total obligations by object.....	163,661,000	167,954,000	+4,293,000

Summary of changes

1967 enacted appropriation.....	\$164,770,000
Transferred to "Operating expenses, Public Building Service," General Services Administration (space rental).....	-13,000
Comparative transfers within NIH.....	-781,000
Unobligated balance, reserve.....	-315,000
1967 total estimated obligations.....	163,661,000
1968 estimated obligations.....	167,954,000
Total change.....	+4,293,000

	Base		Changes from base	
	Posi- tions	Amount	Posi- tions	Amount
Increases:				
A. Built-in:				
1. Annualization of wage board pay increase in 1967.....				\$2,000
2. Annualization of new positions authorized in 1967.....				12,000
B. Program:				
1. Research grants.....		\$105,996,000		632,000
2. Fellowships.....		6,975,000		464,000
3. Training grants.....		17,525,000		171,000
4. Laboratory and clinical research.....	402	6,727,000	9	872,000
5. Collaborative research and development.....	51	16,359,000		1,093,000
6. Biometry, epidemiology, and field studies.....	87	1,472,000		131,000
7. Direct training.....	17	266,000		4,000
8. Review and approval of grants.....	105	1,193,000		48,000
9. Program direction.....	33	583,000		6,000
Total program increases.....			9	3,421,000

	Base		Changes from base	
	Posi- tions	Amount	Posi- tions	Amount
C. Payment to "National Institutes of Health management fund" for centrally furnished services:				
1. Laboratory and clinical research.....		\$4,732,000		\$794,000
2. Collaborative research and development.....		69,000		5,000
3. Biometry, epidemiology and field studies.....		118,000		9,000
4. Direct training.....		23,000		2,000
5. Review and approval of grants.....		1,378,000		45,000
6. Program direction.....		235,000		20,000
Total, management fund.....		6,555,000		875,000
Gross increases.....			9	4,310,000
Decreases: 1 less day of pay (261 days in 1967, 260 days in 1968).....				-17,000
Total net change requested.....			+9	+4,293,000

EXPLANATION OF CHANGES

Research grants.—The net increase of \$632,000 will provide \$4,781,000 for the competing continuation of existing regular program project grants and \$1,165,000 for general research support grants. These increases are partially offset by a decrease of \$5,314,000 in noncompeting continuation awards.

Fellowships.—The increase of \$464,000 will provide \$1,034,000 for the non-competing continuation of current awards, partially offset by a decrease of \$570,000 in new and competing awards. It will provide an increase of 33 awards over the 1967 level for the research career development award program.

Training grants.—The increase of \$171,000 will provide for additional indirect costs in the undergraduate cardiovascular training area.

Laboratory and clinical research.—The program increase of \$872,000 and 9 positions will provide: \$32,000 and 2 positions for a blood donor program for dogs; \$380,000 for increased dog procurement costs; \$460,000 and 7 positions to outfit and utilize newly assigned space for expansion of present programs.

Collaborative research and development.—The program increase of \$1,093,000 will be used to further research and development of the National Blood Resource Program.

Biometry, epidemiology and field studies.—The program increase of \$131,000 will provide for grant-related contracts (example, vasoactive peptides).

Direct training.—The program increase of \$4,000 will provide for additional tuition costs.

Review and approval of grants.—The program increase of \$48,000 will provide for consultant services.

Program direction.—The program increase of \$6,000 will provide for consultant services.

Research grants

	1967 estimate	1968 estimate	Increase or decrease
Research projects.....	\$87,770,000	\$87,237,000	—\$533,000
Special programs.....	18,226,000	19,391,000	+1,165,000
Total research grants.....	105,996,000	106,628,000	+632,000

REGULAR PROJECTS

Introduction

In its search for the cure, alleviation, and prevention of cardiovascular diseases, the National Heart Institute will support approximately 2,000 research projects through research grants in 1967 and 1968. Most of these projects are a continuation of ongoing research; in their great scope and diversity they range from epidemiological studies on large population groups down through studies on individual cells and cellular components and on the biochemical reactions occurring within them.

The diversity of this research is dictated by the complexity of the problems posed by the cardiovascular diseases. For the most part, their causes are not known with certainty; but, in many instances, a constellation of complex factors—genetic, environmental, and physiological—may operate in their development and in their protein clinical manifestations. For example, atherosclerosis appears to be related not only to metabolic imbalance, but also to blood clotting mechanisms and the dynamics of flow in vessels; and susceptibility to the disease may be influenced by such factors as age, sex, diet, physical activity, psychic stress, and other factors. Congenital heart disease may arise from genetic factors or from a variety of noxious pre-natal factors affecting the fetus at critical stages of its development. For such reasons it has been both necessary and desirable to deploy our research manpower and resources along a wide variety of research approaches.

The following list identifies the major cardiovascular-disease research areas. *Atherosclerosis*, the presence in arteries of fatty plaques that interfere with blood flow, is the most prevalent of all cardiovascular disorders, causing nearly one million deaths per year in America. Complications from this disease include heart attacks, strokes, and congestive heart failure. There has been nearly a ten-fold increase in the number of research projects in this field in the past decade; and currently, in terms of research funds expended for regular grant programs, atherosclerosis is the largest single disease category in the Heart Institute program.

Hypertension—high blood pressure—is one of the most commonly encountered forms of cardiovascular disease. It is estimated that seventeen million Americans between the ages of 18 and 79 have definite hypertension, with 10.5 million adults suffering from hypertensive heart disease, one of the consequences of hypertension. Hypertension aggravates and accelerates the development of atherosclerosis and is a major cause of strokes, heart failure, and kidney failure.

Cerebrovascular diseases—strokes—account for the third largest cause of death annually in the United States—a toll exceeded only by heart disease and cancer. While the most common cause of stroke is blood clots forming in the arteries supplying the brain, strokes are not a discrete medical entity. They are inherently related to other circulatory diseases. Hypertension predisposes patients to strokes; atherosclerosis may weaken blood vessels supplying the brain, predisposing them to rupture, and atherosclerosis deposits in such vessels create conditions favorable to the formation of blood clots.

Congenital heart disease is the main cause of death in infants under two years of age and is one of the costliest of all diseases in its medical care. Knowledge of the causes, development and natural history of congenital heart disease is far from adequate.

Rheumatic fever and heart disease continues to occur in significant numbers even though the full application of existing knowledge and techniques could prevent a large proportion of initial and recurrent attacks. Continued prevalence of this disease is due to several deficiencies: existing methods of disease control fall short of the ideal, gaps remain in current methods of prevention, and existing knowledge is not applied.

During the last two decades there has been increasing recognition that the heart and lungs are not two systems, but one—the cardiopulmonary system. The incidence of *cardiopulmonary diseases*, particularly emphysema, is increasing. Not less than 10% of middle-aged and elderly Americans are afflicted with emphysema. As a disabling disease, it is second only to heart disease; disability allowances now exceed eighty million dollars each year.

The problem of *congestive heart failure and shock* is a large and diffuse one. These are not discrete diseases, but rather symptom-complexes that are often the end results of underlying cardiovascular diseases.

Death and disability from *coronary artery disease* represents the greatest single challenge to modern medicine. The mechanisms by which coronary atherosclerosis causes death and disability involve a broad range of biologic phenomena and of medical manifestations. These range from life-threatening events such as myocardial infarction and cardiac arrhythmias, to major disability from angina pectoris, and must also include psychological problems. All of these may interrelate in complex ways with normal and abnormal function of other body systems.

Maintenance of the normal state of the blood bears an essential relationship to the health of the heart and blood vessels. *Thrombosis* or clotting of the blood within vessels is one of the principal immediate causes of death. Conversely, failure of the blood to clot properly is responsible for much morbidity and mortality from a variety of bleeding diseases and from hemorrhage at surgery. Furthermore, blood factors are indispensable in the management of diseases includ-

ing anemia, leukemia, infectious diseases, hemorrhagic and thrombotic diseases, and traumatic shock.

Summaries of some of the results of research support in 1966 pertaining to these research areas appear in the research highlights that accompany the statement of the Director, National Heart Institute.

Program plans in 1967 and 1968

Plans for these two years are primarily a continuation of current research areas as indicated in the following research grants program analysis table.

A decrease of \$5,314,000 in noncompeting continuations is offset by a corresponding increase in competing projects. This change is needed to continue support of 14 program projects whose long term noncompeting commitment (7 years) expires with their 1967 award and which have been approved as competing renewal awards for 1968.

Special programs

The only request for increased support in 1968 is for \$1,165,000 for *General Research Support Grants*. This increase represents the Institute's proportionate share of the proposed National Institutes of Health increase in this area.

The same level of support, \$4,500,000 is continued from 1967 to 1968 in *Categorical Clinical Research Centers* for the research resources of in depth, multidisciplinary investigations in the cardiovascular area.

Undoubtedly, atherosclerosis and its complications represent this country's foremost health challenge. In the desire to reduce heart attacks and strokes, the major (and more difficult) objective is reducing atherosclerosis. In this problem there is a scientific consensus, based upon a host of well validated studies, that atherosclerosis may be prevented or its advance in the population greatly decelerated; it may be partially reversible. *The Heart Cooperative Drug Study* is a planned, directed effort toward these ends.

The Heart Institute is undertaking to establish and support a limited number of highly selected *Specialized Cardiovascular Research Centers* of excellence in which large and stable investments are deliberately made in groups of investigators capable of imaginative and creative research of which clinical investigation will be an important element. This coordinated approach was developed when it became evident that only by the combined efforts of specialists in various basic and clinical disciplines could causes be uncovered and cures achieved for such complex and pervasive disorders as the cardiovascular diseases. Moreover, within each discipline, the complexity of methodology and technology have created sub-disciplines requiring discrete skills and knowledge. To bring together representatives of these numerous specialties to focus on a common problem requires an environment where they can interact and profit from each other's knowledge and experience. Equally important are the training opportunities to be provided in such a setting for the development of young scientists who can think beyond their own specialties and who can grow with the rapidly changing modern scientific scene.

Viewed in an even larger context, advances in such disparate fields as materials research, electrical engineering, chemistry, and analytical methodology often contribute to the solution of cardiovascular disease problems. However, if the benefits from these advances are to be made available to the patient with heart disease, a research environment must be provided in which scientists from these varied fields can find professional satisfaction in what would otherwise be regarded as a purely clinical setting. This consideration imposes the requirement that the research setting acquire a certain "critical mass" in order for it to be maximally effective as an interdisciplinary activity.

Finally, if research results are to be applied to improve patient care in the shortest possible time, the biomedical research environment must include clinicians concerned with problems of patient care. The symbiotic collaboration between clinician and researcher represents the final step in the development of new treatments of heart diseases.

The National Heart Institute proposes to provide support for interdisciplinary research programs mainly through two support devices: the program project grant (for which Categorical Clinical Center funds provide resource support) and the Specialized Cardiovascular Research Center grant. Both of these grant mechanisms are designed to encourage the team approach. However, they differ in that program projects are concerned *in depth* with a specific aspect of heart disease, whereas cardiovascular research centers will be equipped to implement clinical and basic research and training programs of considerable depth and *breadth*.

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During 1966 the National Heart Institute awarded four planning grants for the future development of Specialized Cardiovascular Research Centers. It is expected that the planning phase will continue through 1967 and 1968 at a level of \$800,000.

Research grants program analysis

	1967 estimate	1968 estimate	Increase or decrease
Atherosclerosis.....	\$16,852,000	\$16,750,000	-\$102,000
Hypertension.....	13,078,000	12,998,000	-80,000
Cerebrovascular diseases.....	1,931,000	1,919,000	-12,000
Congenital heart disease.....	6,846,000	6,804,000	-42,000
Rheumatic fever and heart disease.....	2,896,000	2,879,000	-17,000
Cardiopulmonary diseases.....	6,144,000	6,107,000	-37,000
Heart failure and shock.....	15,974,000	15,877,000	-97,000
Coronary artery disease.....	6,934,000	6,892,000	-42,000
Thromboembolic and hemorrhagic disease.....	8,601,000	8,549,000	-52,000
Other cardiovascular diseases.....	8,514,000	8,462,000	-52,000
Subtotal.....	87,770,000	87,237,000	-533,000
General research support grants.....	8,943,000	10,108,000	+1,165,000
Scientific evaluation.....	163,000	163,000	0
Categorical clinical research centers.....	4,500,000	4,500,000	0
Heart cooperative drug study.....	3,820,000	3,820,000	0
Specialized research centers.....	800,000	800,000	0
Total research grants.....	105,996,000	106,628,000	+632,000

Distribution of research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Num- ber	Amount	Num- ber	Amount	Num- ber	Amount
Noncompeting continuations.....	1,514	\$63,456,000	1,318	\$58,142,000	-196	-\$5,314,000
Competing continuations.....	300	10,000,000	274	15,314,000	-26	+5,314,000
New projects.....	267	9,314,000	228	8,781,000	-39	-533,000
Supplementals.....	(350)	5,000,000	(325)	5,000,000	(-25)	0
Subtotal, regular program.....	2,081	87,770,000	1,820	87,237,000	-261	-533,000
General research support grants.....		8,943,000		10,108,000		+1,165,000
Scientific evaluation and planning.....		163,000		163,000		0
Categorical clinical research centers.....		4,500,000		4,500,000		0
Heart cooperative drug study.....		3,820,000		3,820,000		0
Specialized research centers.....		800,000		800,000		0
Total research grants.....		105,996,000		106,628,000		+632,000

Fellowships

	1967 estimate	1968 estimate	Increase or decrease
Total fellowships.....	\$6,975,000	\$7,439,000	+\$464,000

Introduction

The primary objective of the fellowship programs is to increase the number of scientists qualified to carry on independent cardiovascular research.

Program plans in 1967 and 1968

In the postdoctoral and special programs 312 awards are expected to be supported in both 1967 and 1968. The postdoctoral program encourages young physicians to obtain research training and experience that will enable them to utilize their medical knowledge more effectively in research on cardiovascular disease. Through the special research fellowship award the more advanced scientist is exposed to improved methods and is able to attain new skills by means of unusual training experience in research laboratories other than his own.

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1759

The research career development award program supports the younger investigator of demonstrated ability. The increase of \$414,000 and 33 awards in 1968 will allow for a continued expansion of this most productive program, which is helping to insure the supply of biomedical research scientists adequately trained to guarantee the quality of health research in the future. The research career award program will continue to provide stable support for the senior investigator.

Distribution of fellowships

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Continuations:						
Noncompeting.....	229	\$3,689,000	309	\$4,723,000	+80	+\$1,034,000
Competing.....	92	1,225,000	67	882,000	-25	-343,000
Supplementals.....	(23)	30,000	(23)	30,000	0	0
New.....	201	2,031,000	179	1,804,000	-22	-227,000
Total fellowships.....	522	6,975,000	555	7,439,000	+33	+464,000

Fellowships (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Postdoctoral.....	225	\$1,600,000	225	\$1,600,000	0	0
Special.....	87	725,000	87	725,000	0	0
Research career:						
Career.....	38	1,050,000	38	1,100,000	0	+\$50,000
Development awards.....	172	3,600,000	205	4,014,000	+33	+414,000
Total fellowships.....	522	6,975,000	555	7,439,000	+33	+464,000

Training grants

	1967 estimate	1968 estimate	Increase or decrease
Total training grants.....	\$17,525,000	\$17,696,000	+\$171,000

Introduction

The National Heart Institute through its training grant programs aims at (1) upgrading the quality of research training, which provides concepts and techniques in cardiovascular research, and (2) attracting promising young students to careers in medical research to insure a continuing and expanding supply of cardiovascular scientists and teachers adequately trained to guarantee the quality of health research in the future. Undergraduate training grants are awarded to medical schools to establish, expand, improve, or continue instruction relating to prevention, diagnosis, and treatment of cardiovascular disease. In the graduate area, the ideal training program combines teaching and research to stimulate and train the potential productive investigator.

UNDERGRADUATE TRAINING GRANTS

Program plans in 1967 and 1968

There are 108 undergraduate schools receiving support in 1967 and all have a continuing commitment in 1968. The 108 schools, located in 40 states, the District of Columbia, and Puerto Rico include 90 four-year schools at \$25,000 per school and 18 two-year schools at about \$15,000 per school. The net program increases of \$171,000 will provide for additional indirect costs.

GRADUATE TRAINING GRANTS

Graduate training grants support advanced training programs in basic and clinical cardiovascular research in medical schools, universities, or other research-educational organizations. This instrument permits local identification of young men and women with research potential, provides them with appropriate stipends, and assists the institution to improve the quality of research training. This type of grant is an effective means of bringing basic and clinical scientists together in broader study of cardiovascular diseases through training involving multiple disciplines and several departments.

In recognition of the great need for a large corps of high quality practicing clinicians equipped with the necessary training in diagnosis and treatment of cardiovascular problems, the National Heart Institute in 1966 awarded 18 graduate clinical training grants. It is expected that the National Advisory Heart Council will recommend for approval 18 additional applications in 1967. These will be the physicians who will have the greatest impact in transferring the fruits of research to the care of patients.

The Institute will meanwhile continue its graduate research training program where a majority of trainees will continue to receive multidisciplinary cardiovascular training, with emphasis being placed on physiology, surgery, and internal medicine.

Distribution of training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Continuations:						
Noncompeting.....	329	\$14,304,000	357	\$16,623,000	+28	+\$2,319,000
Competing.....	50	2,711,000	15	810,000	-35	-1,901,000
Supplementals.....	(7)	117,000	(7)	117,000	(0)	0
New.....	12	393,000	4	146,000	-8	-247,000
Total training grants.....	391	17,525,000	376	17,696,000	-15	+171,000

Training grants (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Undergraduate.....	108	\$2,427,000	108	\$2,670,000	0	+\$243,000
Graduate.....	283	15,098,000	268	15,026,000	-15	-72,000
Total training grants.....	391	17,525,000	376	17,696,000	-15	+171,000

Laboratory and clinical research

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefit.....	402	\$4,238,000	411	\$4,323,000	+9	+\$85,000
Other expenses.....		7,231,000		8,812,000		+1,581,000
Total.....	402	11,469,000	411	13,135,000	+9	+1,666,000

Introduction

Laboratory and clinical research programs have their major emphasis upon basic physiological and biochemical studies of the cardiovascular system which seek new knowledge about its structure, function, and abnormalities. The need for a broad program of basic research is founded on the knowledge that the cardiovascular diseases appear to have their roots in the subtle and complex

processes of body metabolism and in the mechanisms by which these processes are controlled. Therefore such basic studies are essential to understanding the underlying causes of these diseases and on the basis of such knowledge, seeking means of preventing or curing them. Closely associated with the basic studies are clinical studies concerned with the application of fundamental knowledge to the diagnosis, prevention, and treatment of diseases of the heart and blood vessels.

Program plans in 1967 and 1968

In 1967 the Laboratory of Cardiovascular Disease has been phased out and two former laboratory sections are being elevated to full laboratory status: the Laboratory of Biochemical Genetics and the Laboratory of Molecular Diseases. In 1968 the program will generally be a continuation of present programs with further shifts of emphasis where new knowledge or necessity dictates.

The program increase of \$872,000 and 9 positions needed for effective research for the coming year will be used as follows:

(1) Two positions and \$32,000 to initiate a program which will establish a colony of dogs to be used as bleeders from which blood may be drawn for transfusion to dogs used in surgical experiments. Heretofore most dogs used in such experiments would have to be sacrificed; the infusion of canine blood will allow recovery and reuse of many of these animals. The object of this program is to decrease the number of research dogs used which will result in a significant savings in their acquisition cost. This is particularly important in view of the drastic cost increase anticipated in the procurement of research animals.

(2) \$380,000 to assure the provision of adequate numbers of dogs for research. There is every evidence that the cost of procuring research animals—particularly dogs—will escalate drastically by 1968 owing to Congressional legislation which requires that sellers of dogs be licensed and subject to inspection. Increased costs associated with improving the dog breeding environment are expected to be passed on to the consumers. The Heart Institute used 4,532 research dogs in 1966 at a cost of \$121,000 or an average cost of about \$27 per dog. It is estimated that the cost of each dog in 1968 will average \$120. Because of the dog blood donor program described above, it is estimated that the Heart Institute will decrease its dog usage to approximately 4,200 by 1968. The \$500,000 required for dog procurement in 1968 is partially offset by the \$120,000 available in the current 1967 budget.

(3) Seven positions and \$460,000 to outfit and utilize newly assigned space for expansion of present programs. In 1968 laboratory and clinical research will be assigned additional space equivalent to half a laboratory wing in the NIH Clinical Center. The new modules will be assigned to the Laboratory of Metabolism, Laboratory of Clinical Biochemistry, Experimental Therapeutics Branch, and the newly created Laboratory of Biochemical Genetics to permit studies which have not been possible because of limited space. Overflow of present staff into the new quarters will reduce the number of positions which would normally be needed for expansion into a laboratory wing.

Included in the increase is \$10,000 for mandatory items such as annualization of positions new in 1967 and annualization of wage board pay increase in 1967, offset by \$10,000 for one less day of pay in 1968. There are also increases of \$794,000 for centrally furnished services from the "National Institutes of Health Management Fund".

Collaborative research and development

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.	51	\$176,000	51	\$176,000	0	0
Other expenses		16,252,000		17,350,000		+\$1,098,000
Total		16,428,000		17,526,000		+\$1,098,000

Introduction

This activity is responsible for administering 1) the *Artificial Heart-Myocardial Infarction Program*, 2) the direct support of the *Heart Cooperative Drug Study*, and 3) the *National Blood Resource Program*.

Program plans in 1967 and 1968

ARTIFICIAL HEART-MYOCARDIAL INFARCTION

Myocardial infarction, a principal form of heart attack, is the largest cause of death in the Nation today. Every year about 750,000 Americans suffer such attacks and, by conservative estimates, more than 350,000 are killed by them. The Artificial Heart-Myocardial Infarction Program is an organized research effort designed to improve understanding and treatment of myocardial infarction and the myocardial insufficiency which results from this and other diseases. The program includes substantial elements of goal-oriented biomedical research covering a broad spectrum of pertinent fields as well as a major bioengineering effort leading to the development of mechanical circulatory assist devices which can be used to support the failing heart. Both parts of the program offer real and early prospect of providing the means for improved treatment of myocardial infarction with consequent lowering of mortality and increased human salvage.

The immediate aims of the Bioengineering Branch are the most rapid, efficient, and inexpensive development of temporary circulatory assist devices and definition of the predictability of patients in whom they may be of value. Longer range goal is the acquisition of data and experience permitting development of a permanently implanted artificial heart should continuing analysis indicate this to be a feasible and desirable goal. The program is applying rigorous methods of systems analysis and systems development. Program definition has been provided in part by a group of parallel study contracts which analyzed the need for circulatory assist devices, and the state of the art in various pertinent technological areas, the specific problems needing more research, and the feasibility of the program. In addition, these studies provided plans for direction, magnitude, and timing of a development program, and documented the need for technological advancement in several major areas as a prerequisite for successful development of circulatory assist devices. A contracts program is planned which will reach an operating level of about 50 contracts per year. The following specific problems need urgent resolution: the development of a long-term percutaneous lead system, for ultimate use in ambulatory humans, to transmit electrical or fluid energy into the thoracic cavity for energizing circulatory assist devices; the development of practical automatic control mechanisms for assist devices; the development of basic theorems and fundamental data pertaining to blood flow at such sites as prosthetic valves, points of connection, and pumping areas in order to define the design limits of devices; the development of a material that is compatible with blood and possesses the physical characteristics required for assist devices; the development of energy sources and conversion and transmission systems for ultimate implantation; and the establishment of tolerances and limits of vibration, radiation, weight, etc., as they relate to device development. Throughout the development of assist devices, appropriate testing and evaluation in animals, and later in man, will take place.

The Medical Branch is responsible for developing a research program designed to improve the prospects of survival following myocardial infarction by the support of research which has the purpose of improving understanding, diagnosis, and treatment of myocardial infarction. An important part of this responsibility is the early development of medical criteria for the use and evaluation of circulatory assist devices and the provision of biomedical support for the development efforts of the Bioengineering Branch.

The medical program is now in the stage of program definition. At this time, it appears that the systems analysis and development methods as used by the Bioengineering Branch will not be appropriate to the task of the Medical Branch and other means of program organization and design will need to be used. Major elements of initial program content are now clearly established and will include: (1) From 6 to 12 clinical myocardial infarction study centers equipped with and staffed to provide optimal patient care while making critical research observations during acute myocardial infarction. These will require highly sophisticated instrumentation and coordinated collection of information. There have been very few systematic and thorough studies of patients with acute myocardial infarction and there are consequent major uncertainties concerning the cause, the de-

terminants of survival, the specific cause of death and the effects of treatment. These uncertainties must be resolved to allow rational development of effective interventions including circulatory assist devices. (2) The development of an appropriate animal model of myocardial infarction. Practical and ethical constraint limits the research which can be done on patients with acute myocardial infarction and major disciplines such as biochemistry and physiology are unable to bring some of their most powerful and promising techniques to bear on the clinical problem. There is strong evidence that animal models can be developed which offer the exciting prospect of bringing new and promising disciplines such as myocardial metabolism to bear on the problem of myocardial infarction. (3) The development of improved instrumentation for the study of animals and patients is essential to both of the foregoing activities. A complex system must be developed to permit patient care and simultaneous and non-interfering research. A large number of measurements must be made, stored, analyzed, and presented for this purpose. Several specific instruments need to be modified or developed. (4) A substantial program of clinical pharmacology is needed to establish the true effect of traditional treatment of myocardial infarction and to document precisely the effects of innovations since many forms of treatment including circulatory assist devices will interact in the patient. (5) The largest single mortality group are those patients who die within the hour after the onset of symptoms. Very little is known of the cause of death in these patients but several of the most likely specific causes such as arrhythmias or electro-mechanical uncoupling might be susceptible to prophylactic or emergency interventions which could preserve life until standard treatment is available.

HEART COOPERATIVE DRUG STUDY

This is an Institute coordinated program to determine whether several lipid-lowering drugs will reduce the incidence of recurrent attacks and increase longevity among heart-attack victims. Most of the funding of this study is by research grants to approximately 50 participating clinics. Ancillary funds included under Collaborative Research and Development are for reimbursement to other government agencies for performing the required laboratory determinations and for ordering, packaging, and distributing the necessary drugs.

NATIONAL BLOOD RESOURCE PROGRAM

This program is designed to meet a critical problem that is developing relative to the national resource of blood for therapeutic use. The demand for separate blood components is rapidly rising at a time when there is a lag in the necessary technology to provide them on a large scale. As the demand for whole blood increases moderately with population growth, the demand for fractions of blood for use in specific therapy will rise sharply. Present collection and processing methods of whole blood are costly and cumbersome. In addition, waste of fractions may result from various sources of demand, which would process blood for only their desired component without regard to other component needs.

There is at present no reasonably priced, consistently effective anti-hemophilic globulin available for treatment of the hemorrhagic crisis of hemophilia. An effective concentrate from blood plasma must be obtained in adequate quantities for further progress in research and treatment. Other fractions of blood needed for research progress and clinical use include: plasma thromboplastin component for research and treatment of hemophilia B; red blood cells; platelets; separated leukocytes for research in the treatment of leukemia and immunology; complement for immunologic research; and specific protein fractions for highly specialized research and clinical application.

This program, coordinated within the National Heart Institute, will utilize an advisory board representing Government and private organizations concerned with the use of the Nation's blood resource. Blood collection, processing, and utilization programs will be coordinated as closely as possible. The Institute proposes to work through and with the American Red Cross, benefiting from the two agencies' common objectives, the Red Cross nationwide chain of blood centers, and the combined experience and competence developed from past blood research.

The program increase of \$1,093,000 in 1968 will further developmental projects which include automation of cellular component separation, research aimed at improving the yield of plasma available for fractionation, and revision of large-scale plasma protein fractionation methods. Low temperature preservation and

processing techniques are planned to prevent outdating of blood. Evaluation of new blood components, and new materials and equipment for component processing will aid progress in clinical research and proper treatment of a diversity of disease entities. Plans for attacking these problems are described in some detail in a special report prepared.

There are also increases of \$5,000 for centrally furnished services from the "National Institutes of Health Management Fund".

Biometry, epidemiology, and field studies

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	87	\$923,000	87	\$920,000	0	-\$3,000
Other expenses.....		667,000		807,000		+140,000
Total.....	87	1,590,000	87	1,727,000	0	+137,000

Introduction

This activity is responsible for planning and coordinating the Heart Institute's epidemiological, biometrical, clinical trial, and geographical disease studies in cardiovascular disease in the United States and abroad. Its two primary objectives are: 1) to make use of natural population experiments to carry out epidemiological research to discover what factors may be responsible for unusually low rates of cardiovascular disease found in certain populations in contrast to those factors which may be responsible for the high rates generally found in the U.S.A.; and 2) to determine whether or not the prevention or a reduction of heart disease morbidity and mortality can be accomplished by scientific modification of suspected risk factors in controlled clinical trials.

Program plans in 1967 and 1968

The Framingham Study continues to amass important new data on factors increasing heart disease risk and will be continued on 1967 and 1968.

Two major epidemiological projects, a study of coronary disease and cerebrovascular disease among men of Japanese ancestry in Hawaii and of coronary disease and hypertension among Puerto Rican males, are off to promising starts. These studies are expected to provide crucial testing grounds for a number of hypotheses concerning the role of diet, blood-lipid patterns, and other host and environmental factors as determinants of heart-disease risk.

The program increase of \$131,000 will be used in the support of grant related contracts. In 1961 such contracts are mostly to provide uniform synthesis of highly radioactive peptides to grantee laboratories which do not have access to these new peptides because of the high cost involved if they were to be prepared on an individual basis. It is anticipated that this need for peptide production and similar types of grant-related contracts will continue to exist in 1968 to coordinate and utilize the experience of industrial firms to provide grantees with new and unique materials. Included in this net increase is a decrease of \$3,000 for one less day of pay in 1968. There are also increases of \$9,000 for centrally furnished services from the "National Institutes of Health Management Fund".

Direct training

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	17	\$182,000	17	\$182,000	0	0
Other expenses.....		107,000		113,000		+\$6,000
Total.....	17	289,000	17	295,000	0	+6,000

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Incorporated in this program is the training of Public Health Service personnel to meet the long-range and immediate scientific personnel needs of the Institute and the Service. This is an important and basic part of the heart research program in that it provides for the training of qualified investigators who must keep abreast of new knowledge, techniques, and methods that are constantly being developed so that they may function at the highest level of proficiency in the cardiovascular research effort.

Of the \$6,000 net increase requested \$4,000 will provide for additional tuition costs and \$2,000 for centrally furnished services from the "National Institutes of Health Management Fund".

Review and approval of grants

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	105	\$968,000	105	\$967,000	0	-\$1,000
Other expenses.....		1,603,000		1,696,000		+83,000
Total.....	105	2,571,000	105	2,663,000	0	+92,000

This activity provides for assembling, processing, and reviewing all cardiovascular grant applications; support of the National Advisory Heart Council and special review committees and consultants; grant tabulation and analyses; and the scientific and administrative management of grants.

Of the \$92,000 net increase requested \$48,000 will provide for additional consultant services. Also included is a net decrease of \$1,000 for annualization of positions new in 1967, offset by one less day of pay in 1968. There are also increases of \$45,000 for centrally furnished services from the "National Institutes of Health Management Fund".

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	33	\$227,000	33	\$228,000	0	+\$1,000
Other expenses.....		591,000		617,000		+26,000
Total.....	33	818,000	33	845,000	0	+27,000

This activity supports the over-all administration, coordination, and direction of the varied programs and activities of the Institute. The Director and his immediate staff are responsible for introducing new knowledge into current operating programs and for the planning, development, and review of new areas of focus and interest.

Of the \$27,000 net increase requested, \$6,000 will provide for additional consultant services. Also included is a net increase of \$1,000 for annualization of positions new in 1967 partially offset by one less day of pay in 1968. There are also increases of \$20,000 for centrally furnished services from the "National Institutes of Health Management Fund."

New positions requested, fiscal year 1968

	Grade	Annual salary
Laboratory and clinical research:		
Scientist (3).....	GS-12	\$32,781
Research technician (2).....	GS-9	15,392
Research technician (4).....	GS-7	25,804
Total new positions, all activities (9).....		73,977

PREVENTION, RELIEF, AND CURE OF CARDIOVASCULAR DISORDERS

Senator HILL. Dr. Frederickson, we are delighted to have you proceed in your own way, sir.

Dr. FREDERICKSON. Mr. Chairman, and members of the committee, the mission of the National Heart Institute is to conduct and support research to improve our understanding of the cardiovascular system in order to develop means of prevention, relief, or cure of disorders affecting its functions.

HEART, BLOOD, BLOOD VESSELS, AND CIRCULATION-RELATED ORGANS AND GLANDS

The cardiovascular system includes the heart, blood vessels, and the blood itself. The functions of the lungs and kidneys are so interrelated with the circulation that they must inevitably be included in our purview; and the same is true of certain endocrine glands, of the autonomic nervous system, and of many other tissues whose metabolism and secretions affect the rhythm of the heart, the strength of its contractions, the content of the blood, and the caliber and integrity of blood vessels.

Senator HILL. There are many things that enter into this.

RELATED STUDIES

Dr. FREDERICKSON. There are many things. It is a very complex and broad field. We must also be concerned with the study of man's environment, his diet, his physical activity, his emotions, his genetic inheritance, and embryonic development where such factors bear on the ability of his circulatory system to perform well its central function of carrying blood to sustain life in all tissues of the body.

Senator HILL. You did not mention smoking.

Dr. FREDERICKSON. That is part of man's environment, as are emotional stress and even other factors.

1966 RESEARCH PROJECTS

Deployed across this broad front, the programs of the National Heart Institute supported more than 2,200 research projects at more than 420 universities, hospitals, and other institutions during 1966. Their achievements were recorded in more than 3,800 papers and abstracts added to the scientific literature during the year.

Senator HILL. Do most of these papers and abstracts find their way to the National Library of Medicine?

Dr. FREDERICKSON. Yes, sir.

Summaries of some of their results appear in the highlights and special reports to be submitted to the committee. Thus, I shall con-

fine these remarks to a brief discussion of several current programs that I believe will be of particular importance and interest to the committee.

I think it might be helpful if I could interpolate some recently available information, much of which has already been discussed today, which brings into perspective the relative magnitudes of several diseases with which the Heart Institute is particularly concerned.

CARDIOVASCULAR DISEASES AND DEATHS

As was noted here this morning, about 1 million of the 1.8 million deaths among Americans in 1965 were attributed to cardiovascular disease. This is about 54 percent of the total.

Now these diseases accounted for two out of three deaths over the age of 65, but they also caused more than 250,000 deaths among younger Americans.

HYPERTENSION

Dr. Shannon has already discussed hypertension, which indeed is probably the most common cardiovascular disease, but it is not the greatest killer. There has been a very gratifying decline in mortality from hypertension, as he mentioned; and much of this, I think, is due to better drug control of severe forms of hypertension.

ATHEROSCLEROSIS

The major cause of cardiovascular deaths in our population is atherosclerosis. This includes coronary heart disease and heart attacks. Nearly 560,000 deaths were attributed to this particular disorder in 1965; and there is no basis for optimism here as opposed to some of the other cardiovascular diseases because the death rate rose about 11 percent over the decade 1955 to 1965. This rate increased in all age groups over 45.

Senator HILL. It went up 11 percent.

Dr. FREDERICKSON. Yes. That is for the aggregate of all age groups. It increased about 60 percent in the 45 to 55 age bracket, a very important productive period.

Now the underlying abnormality is atherosclerosis. This is also the basis for many of the deaths from strokes. Atherosclerosis outweighs all other disease problems in importance as a cause of death and understandably accounts for the major share of our activity in heart research.

This research extends from attempts to understand the cause and hence develop better means of prevention of atherosclerosis on to developing means to assist survival of those who are now suffering from this extremely prevalent disease.

ARTIFICIAL HEART PROGRAM

One of the programs important in this regard is the artificial heart program.

Senator HILL. You have not made quite as much progress as we thought we would a year ago.

Dr. FREDERICKSON. I think we have made progress.

Senator HILL. I know we have made progress but not as much as we thought we would.

Dr. FREDERICKSON. No; we have not. I think we have realized the problems.

Dr. SHANNON. I think we have made as much progress as was possible. I think some people were a little too optimistic.

Senator HILL. Some witnesses before this committee perhaps? Not necessarily NIH? Perhaps others were a little too optimistic.

All right, Doctor.

PROGRAM APPROPRIATIONS

Dr. FREDERICKSON. The Congress appropriated \$3.8 million in fiscal year 1966 and \$13.7 million in 1967 to support an organized program of artificial heart development.

FIRST SUCCESSFUL USE OF DeBAKEY HEART PUMP

The past year has seen the first successful use of the DeBakey type heart pump to assist the heart in the early days of recovery from cardiac surgery.

KANTROWITZ DEVICE

The Kantrowitz device has had initial trial in man, and at least six other different types of pumps to assist or replace the left ventricle have been brought to the stage of animal testing.

Senator HILL. The Kantrowitz is a New York device.

Dr. FREDERICKSON. Yes; the Maimonides Hospital of Brooklyn.

Dr. SHANNON. Senator Cotton would also like to know that the basic work is being done in Cambridge, up close to him.

Senator HILL. That is in the Bay State, Massachusetts.

Dr. SHANNON. That is right. It is fairly close you know.

Senator HILL. I understand.

Go ahead, Doctor.

The Institute has to date let 50 contracts to further research and development of such devices.

The experience gained so far has allowed us to reach this year a major decision concerning the proper course that this program should now take. It has become evident that immediate steps must be taken to assure that our knowledge of the effects of mechanical assist devices on the heart and body of the recipient progresses apace with the development of the devices themselves.

It is foreseen that the major need for artificial assist devices will occur in the treatment of acute heart attacks, or myocardial infarction, a national health problem of staggering dimensions. Every year about 750,000 Americans suffer such attacks and, by conservative estimates, more than 350,000 are killed by them.

We have no valid estimate of how many might be saved by appropriate mechanical assistance for their failing hearts, but we believe that the number may be substantial indeed.

ARTIFICIAL HEART-MYOCARDIAL INFARCTION PROGRAM

This objective and the development of an artificial heart can be logically and efficiently coordinated under a single program. An artificial heart-myocardial infarction program has therefore been established. Its activities fall into two branches.

The bioengineering branch is concerned with the development and refinement of heart-assist devices. Its short-term objectives will be

confined to pumping systems designed to provide temporary assistance to sustain a damaged heart until it has mended sufficiently to resume its circulatory obligations.

The engineering requirements of this problem, dealing with materials, power sources, and control mechanisms, can be forecast reasonably well. Systems development techniques will be used to the maximum feasible extent.

Experience gained during the development of temporary devices will provide an essential base of knowledge from which it will be possible to drive toward the more ambitious goal of a permanent replacement for hearts damaged beyond salvage.

GAPS IN SCIENTIFIC KNOWLEDGE

Resources can eventually be committed toward development of a permanent implantable artificial heart in deliberate steps after the closure of present gaps in scientific knowledge concerning the body's ability to accept and use such a device.

Senator HILL. Speaking about the present gaps, are they very wide now?

Dr. FREDRICKSON. Yes, they are pretty wide. I think the medical branch of this joint program will help us close these gaps or to narrow them progressively in a coordinated way. Its aim is to increase our understanding of myocardial insufficiency and to improve its clinical management.

From six to 12 acute coronary care units in major institutions will receive support enabling them to provide the most advanced care of heart attack victims while conducting sophisticated and systematic observations on the acute attack and its most dangerous complications.

We need to learn more about the presently unpredictable clinical course of myocardial infarction, about causes of death and determinants of survival. And we propose to bring all the talent we can muster to bear on many unsolved problems in diagnosis and therapy. This targeted program will also provide the best circumstances for definition of the role of heart-assist devices in the clinical management of myocardial insufficiency.

TWO-PRONGED ATTACK

The artificial heart-myocardial infarction program thus represents a two-pronged attack. Coordinated under single direction, it will seek to direct the efforts of clinicians, biologists, and engineers against a single disease target on an almost unprecedented scale.

For this reason, and because of the signal importance of its goal, we look upon this program as one of the most significant biomedical efforts of our time.

At the same time that the Institute is mounting the artificial heart-myocardial infarction program, it must increase its efforts to prevent coronary artery disease and myocardial infarction by attacking the underlying cause, the disease atherosclerosis.

The evidence is now quite good that the incidence of coronary occlusion in young men will decrease if we can reduce the level of certain plasma fats or lipoproteins in Americans. The question is how and at what age we must begin to do this.

DIET-HEART FEASIBILITY STUDY

The diet-heart feasibility study, begun during fiscal year 1962, has been completed. Its report will be available to the Institute for program planning purposes before the middle of 1967 and will be published soon thereafter.

We expect this experiment to provide us with the base for determining whether it is feasible to conduct a large-scale prospective study in which the American diet would be sufficiently altered to ascertain the effect on coronary occlusion.

Senator HILL. Do you expect to have that shortly?

Dr. FREDRICKSON. Yes, we do, by June.

Senator HILL. You have been working on this since when?

Dr. FREDRICKSON. Since 1962.

Senator HILL. Dr. Shannon seems to have kept his weight down pretty well.

CORONARY DRUG STUDY

Dr. FREDRICKSON. Perhaps in anticipation of the report.

Meanwhile, a second major cooperative study, the coronary drug study, is underway. This is an Institute coordinated program to determine whether several lipid-lowering drugs will reduce the incidence of recurrent attacks and increase longevity among heart attack victims. It is progressing smoothly.

By December 1967, we expect to have enrolled all 55 participating clinics and the recruitment of the required 8,500 patients to be well underway.

Senator HILL. They will be your clinical patients?

Dr. FREDRICKSON. Yes, sir; this figure includes the patients who will receive the drugs and also a control group, who will receive a placebo instead of drugs, but otherwise will receive the same care as the drug-treated patients. They will be in association with some 55 clinics spread clear across the United States.

The central facilities for coordinating the study, performing the required laboratory determinations, and distributing the necessary drugs are all established and operating.

NATIONAL BLOOD RESOURCE PROGRAM

Another major program of the Institute for which funds were first appropriated in fiscal 1967 is the national blood resource program. Its aim is to provide coordination of research and development in the fields of blood preservation and fractionation and to guarantee allocation of support for efforts to take advantage of newer techniques already applied to the problems of blood fractionation on a laboratory scale.

The need for such programing mounts daily. It has become increasingly evident that whole blood transfusions are no longer always desirable or needed, and demand is rising precipitously for separate blood components, such as platelets for treatment of leukemia, antihemophilic globulin for hemophilia, and gamma globulin for protection against infectious diseases.

Senator HILL. That has come to light more recently.

Dr. FREDRICKSON. Yes, it has.

MAJOR GOALS

A program director has been appointed who will work with an advisory group representing the American Red Cross and other agencies most concerned with proper usage of the Nation's blood resource. A program has been developed with a major immediate goal of devising more efficient, highly automated methods for the mass production of medically important cellular and protein fractions of blood.

Other major goals are the development of improved preservation and storage techniques for blood and blood products. Such techniques would go far toward minimizing losses that now result from the rapid deterioration of whole blood and certain fractions under current storage conditions.

Senator HILL. That is a problem today.

Dr. FREDERICKSON. Yes, it is. A fairly sizable share of the whole blood that is drawn expires on the shelf and cannot be used as whole blood because of this problem.

SPECIAL REPORT TO COMMITTEE

Present plans for attacking these problems are described in some detail in a special report prepared for the committee.

Senator HILL. We will have that appear in the record.

Dr. FREDERICKSON. Yes, sir.

(The report follows:)

NATIONAL HEART INSTITUTE: THE NATIONAL BLOOD RESOURCE PROGRAM

The past two decades have witnessed rapid advances in the use of blood for therapeutic purposes. Research has yielded important new knowledge of the functions of many of the elements of blood and has provided fractionation techniques for separating various components out of this complex fluid. One blood fraction after another has proved to have therapeutic usefulness; and, increasingly, such specific fractions are red blood cells, platelets, albumin, or clotting factor concentrates are replacing transfusions of whole blood or plasma in clinical states caused or complicated by deficiencies of some particular blood components.

Transfusions of whole blood or plasma remain indispensable in those clinical situations where shed blood must be replaced or circulating blood volume expanded. But as medical science grows steadily more discriminating in the employment of blood and blood products, the demand for specific blood fractions will rise much more rapidly than that for whole blood and plasma. Fortunately, the need for these fractions need not outstrip the supply, for developments in engineering and technology have probably made feasible the mass production of blood components and the automation of many of the steps involved in blood processing.

But foreseeable needs can be met only if the national blood supply is carefully husbanded. This will require a national plan for the modernization of blood production and distribution systems, the mobilization of resources and coordination of effort. No longer can we afford to rely on haphazard approaches to the solution of problems as they become critical: the claims on the National blood supply are too great, too varied, and too conflicting. In the face of an annual blood supply of 6.5 million units, only the most carefully planned use of this resource can meet the large need for whole blood and plasma plus needs for platelets from 2 million units, antihemophilic globulin from 1 million units, gamma globulin from 4.5 million units, and a steadily growing need for red blood cells and other fractions.

Because it has become apparent that the persistent use of blood is exceedingly wasteful, one of the major goals of the National Blood Resource Program is to effect economies in the use of donor blood. We feel that the potential savings that might accrue from more efficient management of blood resources would repay many times over the investments necessary to achieve these savings.

It is difficult to place a dollar value on a unit of blood; but, even if one considers only the tangible costs of processing it, \$10 per unit is probably a conserva-

tive estimate. In 1965, approximately 1,800,000 units of blood were drawn that were never transfused. This blood became outdated in storage, the red cells and other cellular components were discarded, and only a part of the plasma was saved for fractionation. Thus, the loss for 1965 alone was approximately \$18,000,000.

More important than the dollar loss was the fact that blood components were not available to every patient who needed them. Life-saving components, such as antihemophilic globulin and blood platelets, were available in amounts representing only a small fraction of the national requirement. With these and other demands for blood components unsatisfied and steadily increasing, such wastage of blood is becoming intolerable.

The projects to be described in this report represent some of the approaches aimed at the solution of identifiable problems. Each of these approaches should be placed on a firm foundation through a systematic study of its feasibility, its relationship to other program goals, and its probable effectiveness in reducing waste and in increasing the yield and availability of blood products from existing blood resources. This in-depth study should not be a one-shot project. It should provide a basis for the continuing evaluation of blood supplies and their utilization, of changing needs and developing opportunities, and of the possibility and probable cost effectiveness of new projects proposed in the course of the program.

The intelligent direction and orderly development of the National Blood Resource Program will require finding answers to questions such as these: What are the factors contributing to the wastage of donor blood and what is the relative importance of each? To what extent might the institution of a new technique or new instrument effect savings in blood and money? Will these savings justify the probable cost of developing the proposed technique or instrument? Will success in extending the shelf life of blood stored under standard conditions eliminate or reduce the need for developing instrumentation and techniques for freezing blood in large quantities? If not, what should be our capabilities for freezing and storing frozen blood now and in future years? Can military needs for blood and blood products and the potential military drain upon civilian sources be foreseen and planned for? To what extent might a national or regional daily shelf inventory of blood and blood products decrease current inequities between supply and demand? How many "bleeders" are there in the United States and what are their annual needs for antihemophilic globulin and other blood-clotting factors? Can the anticipated need for platelet concentrates be met by supplying fresh platelets, or must we invest in the development of methods of platelet preservation?

These are examples of a very large number of questions that need to be answered now or at intervals in the future. Out of each answer may arise still other questions. But a research and development program, guided by a continuing study of current progress, present needs, and future goals, offers the best and most economical means of providing an adequate blood and blood component supply for the clinical needs of our population and the research needs of our scientists.

Hopefully, as blood fractions become more widely available and physicians become fully attuned to their clinical application, the use of whole-blood transfusion will decline. The use of a specific blood fraction to serve a specific clinical purpose would increase the effectiveness of blood therapy and eliminate many transfusion complications while simultaneously making the rest of the contents of a bottle of blood available to serve other urgent medical needs.

RESOURCES

Fortunately, we already possess the scientific manpower and technological resources needed to develop and implement a coordinated program of blood collection, processing, and utilization. These resources need only to be mobilized, strategically deployed, and their efforts integrated into a unified attack on the problems that confront us.

A number of Institutes at NIH conduct and support programs of research relevant to these problems. NHI, for example, invests heavily in research on blood banking and preservation; immunological considerations in blood therapy; blood coagulation and clot dissolution; and the causes, diagnosis, and clinical management of hemorrhagic diseases. The National Cancer Institute supports research on blood-forming tissues and blood components, particularly such formed elements as platelets and white blood cells. The National Institute of Arthritis

and Metabolic Disease has a special research interest in all types of anemias and the National Institute of Allergy and Infectious Diseases in immunological proteins of plasma. The Division of Biologics Standards has the Federal responsibility for quality control of blood and blood products shipped in interstate commerce.

The most important resource is, of course, the American Red Cross, whose nationwide chain of 56 blood centers collected, processed, and distributed nearly 3,000,000 units of blood during 1965. The Red Cross also spends about \$1,000,000 annually for blood research and many NIH-supported research projects are carried out in Red Cross Laboratories. Their nationwide network of facilities and their special expertise in the handling of blood and blood products will be indispensable assets.

Thus, while it will be headquartered in the National Heart Institute, the National Blood Resource Program will be a cooperative venture requiring close teamwork and liaison between NHI, a number of other Institutes of NIH, and other Federal and non-Federal agencies.

The Chief of the NHI office for the National Blood Resource Program also bears responsibility for coordination of the Institute's grant-supported activities in the fields of hemorrhagic diseases and thrombosis and thrombolysis. The close interrelationships of all these activities provides this office with a knowledge of the nationwide programs in hematology that will enhance the effectiveness of its direction of the Blood Resource Program.

THE PROGRAM

The National Blood Resource Program will direct research and development activities concerned with improving methods of preservation for blood and blood components and with modernizing and automating blood processing and fractionation. The goal is a modern, large-scale system capable of supplying comprehensive blood component services on a national scale with minimal waste and maximum economy. In the discussion that follows, each of the various blood fractions will be taken up separately with regard to their present and potential value to research and clinical medicine and current approaches to the solution of problems involved in their large-scale production.

Red Blood Cells can restore the oxygen-carrying capacity of the blood in patients acutely anemic because of blood loss or chronically anemic because of some disease state interfering with normal red-cell production. Of all blood components, red cells are needed in greatest quantity; yet there is an enormous annual waste of them.

The chief reason is that when whole blood or red-cell suspensions are stored at 4°C, as is the practice in most hospitals, the red cells begin to deteriorate after 3 weeks, become unsafe for medical use, and must be discarded. In view of unavoidable and unpredictable fluctuations in local blood supplies and in the clinical demands upon them, some wastage of red cells may be inescapable; but losses could be minimized if the shelf life of red cells could be extended.

One promising approach is the use of additives to prolong red-cell survival under standard storage conditions. Studies by the U.S. Army indicate that one of the most promising of these additives is adenine, a preservative that appears to double the shelf life of whole blood stored at 4°C.

Adenine is a precursor substance in the generation of adenosine triphosphate (ATP), a high-energy compound that powers the energy-consuming processes of cell metabolism. It may be that addition of this substance to blood improves red-cell survival by enabling these cells to generate enough ATP to sustain essential metabolic processes during storage at low temperatures.

Intensified testing of adenine and other blood preservatives is a high-priority goal of the program, for even limited success could result in substantial savings of whole blood and red cells.

It is also possible to preserve red cells for prolonged periods by freezing and storage at very low temperatures, but the process is presently cumbersome and expensive. Red cells are destroyed by freezing unless they are first exposed to gradually increasing concentrations of glycerol solution. Then, prior to use, the cells must be thawed and the glycerol removed in another time-consuming operation.

Some unanswered questions remain concerning the final glycerol concentration to be achieved before freezing, the rate of freezing, and the temperature of storage to produce best results; but it should prove possible to preserve blood

cells almost indefinitely when this technique is perfected. It also appears likely that the whole process can be automated. The major problems are 1) the development of plastic containers that retain strength and pliability during prolonged storage at temperatures as low as -120°C ; and 2) the design of large, low-temperature storage rooms providing automatic storage, retrieval, and inventory control. (The required temperatures would not permit personnel to enter the storage facility.) These problems are not unsurmountable.

Another means of minimizing whole blood or red-cell losses would be a national or regional daily shelf inventory. Through the use of computers and air transport, it should be feasible to meet or forestall blood shortages developing at any given hospital of a region by drawing on blood surpluses of other hospitals in that region.

A regional inventory of rare blood donors could also eliminate many problems. A Boston surgeon's need for 12 units of a rare blood type for open-heart surgery might be met, for example, by summoning donors known to reside in the New York area to a local blood center, then shipping the blood to Boston. In many instances, shelf outdating of rare blood could be prevented entirely by drawing on donors only when the need is apparent.

Program plans call for studies to determine the feasibility of such inventory systems.

An important source of waste of blood resources is the use of whole blood in situations where red cells or other cellular components of blood are called for, but are not available. Much of this waste could be avoided if automated equipment for separating the cellular components from blood were available in large, strategically located blood centers. Such equipment is being developed by IBM under contracts with the National Cancer Institute. The system is designed for rapid, continuous flow operation and yields almost pure fractions of red cells, white cells, platelets, or plasma. Some further engineering refinements are needed, as are studies of the viability of cellular fractions produced by the system. However, when perfected and installed in key blood centers, the system will be a major step toward meeting the steadily growing need for blood components.

White Cells (leukocytes) are vital to the body's defense against infection. In cancer, leukemia, and certain allergic states, circulating leukocytes are frequently diminished in quantity or impaired in functional quality. As a result, the patient is susceptible to serious infections that may not respond to antibiotic treatment. Preliminary evidence suggests that transfused white cells can be beneficial in such cases.

Leukocyte transfusion may also have value in organ transplantation. If the transplant is to "take," the immunological defenses of the recipient must be suppressed by drugs or x-ray. The threat of infection may be reduced by transfusing the recipient with leukocytes from the organ donor. These leukocytes not only confer temporary protection against infection, but are also compatible with the implanted organ.

The white cells are readily fractionated by the cell separation instruments previously described. It is probable that the instruments can be adapted to separate the several different types of leukocytes.

Platelets, the smallest cellular components of blood, play a prominent role in the initiation of coagulation, in the formation of clots, and in the maintenance of the blood-vessel integrity.

Leukemia patients often have low circulating platelet levels, either as a result of the disease itself or as a toxic reaction to the drugs used in treating it. Drug treatment of solid tumors also frequently reduces platelet levels. Such platelet deficiencies can result in serious, often fatal hemorrhage.

Although it has been demonstrated that transfusions of fresh platelets can be life-saving in such patients, adequate platelet therapy is available in only a few medical centers. A single day's treatment may require platelets from the blood of as many as eight donors, and it may be necessary to repeat the treatment several times to see the patient through a single hemorrhagic crisis. A conservative estimate of the national need would about two million platelet units a year. (One unit equals the platelets from one pint of blood).

In order to meet this need, a number of difficulties must be overcome. Platelets are extremely fragile and have a marked tendency to adhere to foreign surfaces and to each other, which makes them difficult to handle. Because they cannot withstand storage at 4°C , platelets must be separated from freshly drawn blood and used within 6-12 hours. Furthermore, present methods of processing platelets are so costly and time consuming that few blood banks are able to supply their local needs.

Two recent engineering developments promise a solution. The first is the automated cell fractionator, described earlier, which rapidly removes platelets from individual bottles of blood. The second is a modification of the same instrument that enables it to receive blood directly from a donor's vein, remove the platelets, then return the rest of the blood to the donor. Using this modification, many more platelets can be safely obtained from a donor at a single bleeding. Models of these instruments are already in operation and two or three years of further developmental work can perfect them.

Another approach to the platelet supply problem is low temperature storage. Although platelet freezing is not yet practical, recent experiments suggest that effective techniques may eventually be developed. Present freezing techniques tend to impair the platelets' biological function and produce unacceptably low yields (only 20-30% of the theoretically possible yield), but the quest continues for more efficient methods. These are urgently needed for conservation and efficient utilization of the national supply.

Plasma, the fluid or non-cellular part of blood, is used as a source for a variety of proteins and as a therapeutic agent in cases where rapid blood-volume expansion is necessary, as in shock, burns and severe hemorrhage. Plasma from outdated whole blood is a suitable source of proteins. In blood bank practice, as stored blood reaches the end of its shelf-life, the cells are separated and discarded and the plasma pooled in large containers for protein fractionation. However, plasma for therapeutic use must be derived from fresh blood. It may be frozen in individual units and kept indefinitely.

The most nagging problem relative to the use of plasma, as with whole blood, is the danger of transmitting hepatitis virus. A small but significant proportion of apparently healthy donors carry the virus in their blood stream, but there is presently no way of demonstrating its presence or absence in a unit of blood, plasma, or protein fraction. Infusion of plasma from individual donors carries some risk of hepatitis transmission, but the risk is greatly compounded by pooling the plasma from many donors; hence pooled plasma is preferably not used in treating patients. A method for reducing the risk of hepatitis transmission in blood and blood components is urgently needed.

Plasma production from blood can be greatly facilitated by the IBM cell separator, previously described, which not only provides specific blood fractions, but also increases the plasma yield from a bottle of blood by 25 percent.

Plasma contains a wide variety of proteins that differ in chemical composition and in physiological function. Chemical fractionation methods take advantage of the fact that the different proteins precipitate from ice-cold plasma at different rates as increasing concentrations of salts or alcohol are added. However, in large-scale production, the yield by this method is very low, sometimes only 20-30% of actual protein content.

No significant improvements have been made in these procedures since 1950, and reexamination of the technology is long overdue. New methods of protein fractionation, developed for use at the laboratory level, may prove adaptable to the processing of large batches of plasma; and recently developed chromatographic and electrophoretic techniques should be studied for possible application to the production of special protein fractions.

The program also proposes to explore the possibilities of an automatically controlled system for the separation of the major plasma proteins: antihemophilic globulin, gamma globulin, albumin, and fibrinogen. Feasibility studies will have to be carried out to determine whether a continuous flow system, built on the same principle as the cell separator, will be applicable to protein fractionation. If basic experiments in the first year give promising results, perfecting instruments may require two additional years. If not, attention should then be turned to automation of the traditional fractionation procedures. The objective in either case is to improve purity, uniformity, and yield of the fractions and to increase the efficiency and speed of the production system.

Of the many plasma proteins, five fractions are of special clinical importance and are discussed in the following section.

Albumin, one of the most abundant proteins in blood plasma, is used clinically for the restoration of blood volume, in hemorrhage, burns, or shock. It is an effective substitute for plasma and, since the processing of albumin frees it of hepatitis virus, would find much wider medical application if it were more readily available. The American Red Cross produced 60,000 units of albumin in 1965, about half of the national supply.

Gamma Globulins are a family of protein molecules that includes all known antibodies to infectious diseases. One of the most important uses of gamma

globulin and its subfractions is the protection of individuals who are in danger of infection either by reason of exposure or lowered natural resistance. Antibody fractions for use in protecting against or treating a specific illness are obtained from donors whose gamma globulin fractions are known to be rich in antibody against that disease by virtue of relatively recent infection or immunization.

There is no way of accurately predicting the national demand for gamma globulin during the next five years. One estimate of the requirement for military use alone is that amount which could have been derived from the entire six million units of blood drawn in the U.S. in 1965. There is a rapidly increasing demand for gamma globulin for civilian medicine as well. It is important in preventing or controlling infections in patients with hereditary gamma-globulin deficiencies and is finding increasing use in pediatric practice for the control of chronic infections in infants who have low levels of circulating antibodies. In 1965 over seven million cubic milliliters of gamma globulin, derived from about 1.5 million units of blood, were distributed for use in a wide variety of clinical conditions. A conservative estimate of annual need is about three times this amount.

Fibrinogen, the third most abundant protein of plasma, is the precursor of fibrin, the structural substance of blood clots. Thus it is a vital element in the body's defense against hemorrhage. In clinical medicine, it is used to treat hemorrhage complicating surgery and childbirth and to control hemorrhagic crises in patients who are congenitally deficient in this clotting factor. Although present-day production methods are adequate to meet the national need for fibrinogen, the purity of present preparations leaves much to be desired. Improvement in purity could be effected by modernization of protein fractionation techniques.

Antihemophilic Globulin (AHG) is one of a series of proteins that participate in the clotting of blood. The congenital absence of this clotting factor results in the bleeding disease known as hemophilia A, or classical hemophilia. Victims of this disease are subject to life-threatening hemorrhage from even minor injuries. A tooth extraction may result in hemorrhage so severe as to require 30 to 50 transfusions to preserve life. Spontaneous, often crippling bleeding into the joints and other internal hemorrhages are constant threats. It has been estimated that there are about 100,000 "bleeders" in the United States, perhaps half of them with classical hemophilia; but the tax that hemophilia imposes on the national blood supply is much larger than the incidence of the disease would suggest.

The coagulation defect of hemophilic patients can be corrected (temporarily) only by supplying the missing clotting factor through transfusions of whole blood, plasma, or concentrates of antihemophilic globulin. The clinical use of AHG concentrates avoids many problems encountered with transfusions of whole blood or plasma for the prevention or treatment of hemorrhagic crises of hemophilia. The calculated annual need for AHG is that amount which would be derived from one million units of blood. Red Cross scientists have developed pilot scale methods to produce a highly effective concentrate from blood plasma. An important public health objective is to provide every known hemophiliac with an appropriate dose of AHG to keep in his possession for emergency use.

There is a special problem relative to the production of AHG which complicates the entire process of blood fractionation. It is such an unstable protein that only freshly drawn blood can be used as a source. Further, AHG must be the first protein component removed from the blood, for the processing for other components will destroy it. Unfortunately, the processing required for removal of AHG is destructive to platelets, whereas the prior removal of platelets by present techniques is damaging to AHG. A system of blood fractionation must be devised which will protect both of these factors. Research on different platelet-production methods may provide a solution to this dilemma.

Specific Immune Globulins are presently finding only limited application in medicine, but their clinical importance will doubtlessly increase. Hence provision should be made for their development and production in quantities sufficient to meet anticipated research and medical needs.

Immediately after an infection or recent vaccination, an individual's levels of antibody against the offending organism rise to very high levels. They so dominate his gamma globulin fraction that, for practical purposes, it becomes a specific immune globulin.

Such high-titer specific globulins are becoming increasingly important in therapeutic use. For example, vaccinia immune globulin (VIG) is the only effective treatment for the serious infection which sometimes follows smallpox vaccination. VIG is found in highest concentration in the blood of individuals who have been vaccinated 4-6 weeks previously. The American Red Cross produced and distributed 1,700 doses of VIG in 1965.

Tetanus and measles immune globulins, now being marketed, and rabies immune globulin, now under study, may provide promising new approaches to the prevention and treatment of these diseases. Perhaps more important than any of these is malaria immune globulin, now in the early developmental stage, which may prove useful in the control of strains of malaria resistant to currently available anti-malarial drugs.

CONCLUSION

The goals that the Blood Program has set for itself thus far are realistic, and it is probable that they can be achieved within a reasonably short time. Many problems involved in the large-scale production of blood fractions are fairly sharply defined and their solution appears to lie within the capabilities of present technology; thus it is possible to attack these problems through negotiated grants and contracts for research and development with precisely specified aims. However, these highly targeted projects supplement, rather than replace or compete with, NIH grant-supported research in the field of hematology. In most instances, it has been the broad base of knowledge gained through grant-supported research that has made such targeted research projects possible. Similarly, the steady broadening of this research base through the orderly expansion of grant-support programs in hematology will be essential to the definition and achievement of new program goals. The research-grants program can be likened to the coarse-focus wheel on a microscope, the negotiated grants and contracts program to the fine-focus wheel. The proper employment of both is essential to produce optimum results in the shortest time.

CARDIOVASCULAR RESEARCH CENTERS

Dr. FREDRICKSON. Thus far I have emphasized some Institute programs concerned with coordinated attack upon quite specific disease targets. I should like to turn now to our approach to several other problems identified as requiring well-planned support for optimal use of scientific manpower.

These concern the critical need for increasing convergence of the basic science and clinical disciplines upon cardiovascular disorders.

The Congress supplemented the 1966 and 1967 budgets of the Institute with funds for grants to plan the development of cardiovascular research centers about the Nation. A cardiovascular research center is defined as an organized core group of scientists capable of creative and independent cardiovascular research set up within a university or other institution already engaged in postgraduate training of scientists in many disciplines.

Integrated under an outstanding director, the research program should include work of individuals representing excellence not only in medicine but in other biological and physical sciences. It should also bring a broad range of scientific techniques to bear on clinical problems.

The staff and facilities of these centers will attract and train a substantial number of high-level graduates and thus help to meet increasing needs for cardiovascular research personnel.

The Institute foresees the development of 10 to 12 such centers within the next 5 to 6 years. The center grant should provide funds for renovation or construction of physical facilities where necessary; for the care of research patients; for essential supporting personnel; and for equipment, supplies, and other research program needs.

COST OF CENTERS

The annual cost per center, once it is fully operating, will be in the neighborhood of \$4 million.

For some centers it will cost another \$4 million for the necessary construction of facilities.

Senator HILL. In other words, you will need \$4 million for construction purposes and additional \$4 million each year for operation purposes?

Dr. FREDRICKSON. That is right.

That being the maximum operating level for each center when its full program is implemented.

CLINICAL TRAINING GRANT PROGRAM

As a necessary complement to its programs for training cardiovascular research scientists, the Heart Institute launched a new clinical training grant program last year. The program is designed to help meet serious manpower shortages developing in such critical areas as cardiovascular anesthesiology, diagnostic radiology, hematology, pharmacology, and other related disciplines. This program does not support routine training to fulfill ordinary requirements for a professional degree. It is intended to train physicians to special competence in the most advanced diagnostic and therapeutic techniques developed through research in their particular fields.

Senator HILL. There is quite a need for this, is there not?

PROGRAM GOAL

Dr. FREDERICKSON. Yes; there is. This is a matter of bringing developments and improvements in research to clinical application. The goal of the program is to provide such training to at least 2,800 physicians during the next 5 years. To date, 18 grants have been awarded to 17 institutions and nine others approved.

Senator HILL. You state nine others are approved. You mean you have not had the funds to make the grants?

Dr. FREDERICKSON. These have not yet come to the council, sir, and will be awarded this year. However, there are five additional clinical training grants approved but not awarded because of insufficient funds.

The continued orderly expansion of this program is necessary to meet the increasing demand for such highly skilled clinicians who can translate the fruits of research to clinical care.

CHANGES IN INTRAMURAL RESEARCH PROGRAM

Finally, I should like to call your attention to changes occurring within the NIH intramural research program during the year. The Laboratory of Cardiovascular Physiology was phased out with retirement of its Chief. Two former laboratory sections were elevated to full laboratory status.

The newly formed Laboratory of Biochemical Genetics, headed by Dr. Marshall Nirenberg, is one of the outstanding laboratories in the world engaged in the exciting and exceedingly important studies of the nature of the genetic code.

CRACKING OF GENETIC CODE

I think it is a source of pride to all of us at NIH that the code was actually first cracked through the research of this group. This has been a very significant and important piece of work.

It is concerned with the instructions passed from generation to generation through deoxyribonucleic acids (DNA) in the cell nucleus and their translation by ribonucleic acids (RNA) into the enzymes and structural proteins that determine the nature of all living matter.

Using techniques pioneered in this Laboratory, the Institute scientists have worked out nearly all of the 64 possible RNA coding units, or codons, that direct the sequence in which the 20 amino acids are incorporated into protein chains.

It has been established that a given amino acid is usually represented by more than one coding unit, and it is now necessary to determine which of these coding "synonyms" is the most important one for each. Also being determined are the parts of the code that serve as "punctuation marks" in genetic messages.

LABORATORY OF MOLECULAR DISEASES

The new Laboratory of Molecular Diseases is concerned at an entirely different level with errors in the genetic code resulting from mutations and finding clinical expression in those heritable disorders associated with lipid or lipoprotein metabolism.

The frequency of these disorders in the American or other populations has never been determined, although several of them are fairly common and are frequently associated with accelerated development of atherosclerosis.

Last year this Laboratory introduced a new system for identifying and classifying such hereditary disorders on the basis of plasma lipoprotein patterns. It is using this system at Bethesda in probably the largest study in the world on the hereditary lipoprotein abnormalities.

The new system provides improved recognition of these defects and also better means for evaluating the effectiveness of diet or drug therapy to correct them.

BREAKDOWN OF REQUESTED INCREASE

In conclusion, Mr. Chairman, the request for the National Heart Institute is \$167,954,000 for 1968 as compared with an operating level of \$163,661,000 in 1967, an increase of \$4,293,000.

Of the requested increase \$1,267,000 will be allocated for extramural research and training activities as follows: \$632,000 for research grants, \$464,000 for fellowships, and \$171,000 for training grants.

The remaining \$3,026,000 will be allocated for direct operations, principally for laboratory and clinical research, collaborative studies, review and approval of grants, and program direction.

I shall now be happy to answer any questions the committee might have.

PROGRAM FOR COMBATING ARTERIOSCLEROSIS

Senator HILL. Doctor, of course you have read all of the testimony we have had which has been mighty good this morning. I am thinking

now of arteriosclerosis as a cause of death. There has been a great number brought about by arteriosclerosis.

What is your program in the Heart Institute to combat this disease?

Dr. FREDRICKSON. We have necessarily an extremely broad program, sir, which occupies at least half of our resources. We have to be concerned at both ends of this disease problem.

The long view requires that we do what we can to find out its causes. A very large share of activity, particularly in the research grants area, is concerned with seeking out the multiple causes of this disorder.

It certainly is not due to a single cause. As these causes become more evident it will be possible to develop prevention programs. An example of this is represented by the great concentration of effort in the area of the relationship between diet and arteriosclerosis. In defining these relationships, we are looking forward to the time, possibly several decades from now, when we might be able to prevent a great deal of atherosclerosis, particularly of the premature type.

At the same time we have to be concerned with those who suffer from the disease and cannot wait for its prevention or removal. We are looking in several ways.

CORONARY DRUG STUDY

One is the coronary drug study, which is concerned with people who already have the disease. We would like to relieve them of the complications of this disease and reduce the disastrous mortality and morbidity which these complications presently entail. We are trying to determine whether we can use drugs to prevent the disease from becoming more serious in this group.

Then, at the other extreme, we have the whole artificial heart myocardial infarction program which I have described. This is to bring direct relief to those who have complications from disease. We feel we have a very broad—and necessarily broad—program, and I think an effective one in this area.

REDUCTION IN REQUEST FOR RESEARCH AND TRAINING GRANTS

Senator HILL. Doctor, what balances or deficiencies does this Institute anticipate in the 1968 fiscal year in the research grant and training areas?

Dr. FREDRICKSON. I think we can reasonably project, Senator Hill—

Senator HILL. I might call to your attention, in fact you know it better than I do, that the Budget Bureau really whacked down your request and the Department took quite a cut itself.

You requested \$194,769,000. The Department reduced that down to \$190,385,000. The Budget Bureau really took a whack down to \$167,954,000 for a total reduction of your request of some \$26,842,000.

Dr. FREDRICKSON. That is correct, sir.

EFFECT OF REDUCTION

Senator HILL. What is going to be the effect of that?

Dr. FREDRICKSON. In the research grant and training area the effect will be roughly this. We can project that we will have between 230 and 250 approved research grants that we will not be able to fund next year. I think these will amount to between \$9 and \$10 million.

Senator HILL. Are those good grants?

Dr. FREDRICKSON. Yes, indeed they are good grants.

In the training area we will probably have about 50 approved grants that we cannot fund. These will be in the order of about \$2 million.

Senator HILL. That is largely training of personnel that you spoke of in your statement?

Dr. FREDRICKSON. Yes, in both the graduate research and clinical training areas.

Senator HILL. That will be quite a loss, too, won't it?

Dr. FREDRICKSON. We think that this can represent some loss in the total effort.

Senator HILL. You can't tell me I suppose how many deaths will come about because of the denial of these funds?

Dr. FREDRICKSON. I wish I could, sir.

Senator HILL. You could not tell me that, could you?

Dr. FREDRICKSON. It will represent something like 10 percent fewer grants than we have this year.

Senator HILL. Ten percent fewer grants than you had this year?

Dr. FREDRICKSON. Yes, sir.

Senator HILL. How do you explain that, sir?

REDUCTION IN NUMBER OF GRANTS

Dr. FREDRICKSON. We have about 2,100 grants this year. I think, on the basis of the needs that we project and our ability to fund them on the basis of this budget, we will have something over 1,800 research grants next year.

Dr. SHANNON. Senator Hill, our basic philosophy is that, if you fund a man, you have to fund him adequately to do the job, rather than to distribute the funds in such a way as to make more people get some funds but have nobody completely satisfied. This is a hard decision, but, as a matter of policy—

Senator HILL. It is the better part of wisdom, isn't it?

Dr. SHANNON. Yes, sir; we believe it is.

Senator HILL. That is quite a reduction though, \$26,842,000, from your request.

Dr. FREDERICKSON. Yes; it is, sir.

Senator HILL. I suppose you studied your needs pretty carefully, did you not?

Dr. FREDERICKSON. Yes.

Senator HILL. The truth is I imagine with increased cost in materiel, personnel, and things of that kind the budget estimate really allows you practically no increase at all?

Dr. FREDERICKSON. This is a budget which does not allow the Institute to grow.

Senator HILL. It denies you any increase; is that right?

Dr. FREDERICKSON. That is right.

Senator HILL. As you have brought out, it brings about a reduction?

Dr. FREDERICKSON. Yes, it does in these particular areas.

Senator HILL. Some 251 fewer research grants than you made in the present fiscal year?

Dr. FREDERICKSON. That is approximately correct.

INCREASE IN PRICE-WAGE INDEX

Dr. SHANNON. The increase in the price-wage index over the past year is somewhere between $3\frac{1}{2}$ and 4 percent. Of course that increase affects all these programs precisely the way it affects your bills and my bills. So that to maintain a diversified activity at its current level one has to provide, first, for this thing called the increased cost of doing business. Unfortunately, applying the 4-percent increase to the 1967 base will come to substantially more than the \$4.2 million increase provided in the budget.

This is the basis of the direct calculation.

PRESENTATION TO BUDGET BUREAU

Senator HILL. How much opportunity do you have to really present your case to the Bureau of the Budget?

Dr. SHANNON. Senator Hill, I think we have a very good opportunity. I think that in the final analysis, as operators, we have to abide by the decision that this year there are other needs of the Federal Government which go beyond and that are more urgent than ours in the allocation of resources.

I think the people who make those decisions try to interpret—within their understanding of the programs—where the needs are and their determination of the relative needs are reflected in the budgets. I point out that my problem is less with this year's budget—

Senator HILL. With what, Doctor?

Dr. SHANNON (continuing). Is less with what happens to this year's budget than what will happen over a period of 4 or 5 years. You will recall that a somewhat comparable situation in 1951, when we became involved in activities in Korea, resulted in more or less of a holddown in the development of these activities until Secretary Folsom broke through in 1956, the summer of 1955, which began the present growth.

I would hope that the pause proposed in this budget which is presented to you now is not one that will obtain for a similar period of time. At that time we were in the process of developing new programs. They were quite small.

Now the dynamics of our program are so intimately involved with the fate of so many educational institutions—and the fate of many people who have received scientific training at the expense of the Federal Government—that I would hope that this represents a very temporary pause in the development of these programs.

As we go through the next budget cycle, I hope it will be possible to redress, in a very substantial way, some of the things for which this budget makes only minimal allowance.

Senator HILL. Is there anything you would like to add, Doctor?

Dr. FREDRICKSON. Nothing else, thank you, Senator.

Senator HILL. You have brought us another splendid statement and we appreciate it very, very much.

Dr. FREDRICKSON. Thank you, Senator.

BIOLOGICS STANDARDS

STATEMENTS OF DR. RODERICK MURRAY, DIRECTOR, DIVISION OF BIOLOGICS STANDARDS; DR. JAMES A. SHANNON, DIRECTOR, NATIONAL INSTITUTES OF HEALTH; GEORGE A. BRUST, EXECUTIVE OFFICER, DIVISION OF BIOLOGICS STANDARDS; MRS. ELIZABETH GRUBBS, BUDGET OFFICER, DIVISION OF BIOLOGICS STANDARDS; RICHARD L. SEGCEL, EXECUTIVE OFFICER, NATIONAL INSTITUTES OF HEALTH; CHARLES MILLER, FINANCIAL MANAGEMENT OFFICER, NATIONAL INSTITUTES OF HEALTH; DR. LEO GEHRIG, DEPUTY SURGEON GENERAL; G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

BIOLOGICS STANDARDS

To carry out sections 351 and 352 of the Act pertaining to regulation and preparation of biological products, and conduct of research related thereto, **[\$7,904,000] \$8,649,000.**

Amounts available for obligation

	1967	1968
Appropriation.....	\$7,904,000	\$8,649,000
Comparative transfers within NIH accounts.....	805,000	0
Total.....	8,709,000	8,649,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Biologics standards (total obligations) - - -	333	\$8,480,000	333	\$8,649,000	0	+\$169,000
Unobligated balance, reserve - - - - -		229,000		0		-229,000
Total, obligations and balance - - - - -	333	8,709,000	333	8,649,000	0	-60,000

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Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	333	333	0
Full-time equivalent of other positions.....	6	6	0
Average number of all employees.....	293	296	+3
Personnel compensation:			
Permanent positions.....	\$2, 323, 000	\$2, 338, 000	+\$15, 000
Positions other than permanent.....	37, 000	37, 000	0
Other personnel compensation.....	47, 000	47, 000	0
Total, personnel compensation.....	2, 407, 000	2, 422, 000	+15, 000
Personnel benefits.....	232, 000	234, 000	+2, 000
Travel and transportation of persons.....	118, 000	118, 000	0
Transportation of things.....	10, 000	10, 000	0
Rent, communications, and utilities.....	51, 000	51, 000	0
Printing and reproduction.....	8, 000	8, 000	0
Other services.....	457, 000	274, 000	-183, 000
Project contracts.....	1, 975, 000	2, 275, 000	+300, 000
Payment to "National Institutes of Health management fund".....	1, 708, 000	1, 892, 000	+184, 00
Supplies and materials.....	958, 000	928, 000	-30, 000
Equipment.....	558, 000	439, 000	-119, 000
Subtotal.....	8, 482, 000	8, 651, 000	+169, 000
Quarters and subsistence charges.....	-2, 000	-2, 000	0
Total obligations by object.....	8, 480, 000	8, 649, 000	+169, 000

Summary of changes

1967 enacted appropriation.....	\$7, 904, 000
Comparative transfers within NIH accounts.....	805, 000
Unobligated balance, reserve.....	-229, 000
1967 total estimated obligations.....	8, 480, 000
1968 estimated obligations.....	8, 649, 000
Total change.....	+169, 000

	Base		Changes from base	
	Posi- tions	Amount	Posi- tions	Amount
INCREASES				
A. Built-in:				
Annualization of new positions authorized in 1967.....				\$23, 000
Annualization of wage board pay raise.....				1, 000
B. Program:				
1. Oncogenic research.....	12	\$1, 600, 000		300, 000
2. Equipment and other objects.....		592, 000		260, 000
Payment to "National Institutes of Health management fund" for centrally furnished services.....		1, 708, 000		184, 000
DECREASES				
A. 1 less day of pay in 1968 (261 days in 1967, 260 days in 1968).....				-7, 000
B. Equipment and other objects.....				-592, 000
Total net change requested.....				+169, 000

Explanation of changes

Direct operations.—The program increase of \$560,000 will provide \$300,000 for research contracts to further the Division's efforts in solving problems concerned with oncogenic (tumor-producing) factors as they relate to the safety of vaccines; \$175,000 for equipping renovated space and \$85,000 for specialized research equipment.

Biologics standards

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits-----	333	\$2,639,000	333	\$2,656,000	0	+\$17,000
Other expenses-----		5,841,000		5,993,000		+152,000
Total-----	333	8,480,000	333	8,649,000	0	+169,000

Introduction

The Division of Biologics Standards (DBS) is responsible for assuring the standards of potency and safety of a variety of immunizing agents and diagnostic and therapeutic biological products including blood and blood products for use in human beings. "Potency" means that the products are indeed capable of eliciting the bodily reactions or other effects that they are purported to do. "Safety" means that they will exercise their prophylactic, diagnostic, or therapeutic effect without inducing undue toxic reactions in the individuals to whom they are administered.

The Division's mission encompasses two objectives:

1. Development of standards and requirements, incorporating the necessary guidelines for potency and safety, for biological products to be administered to the general public practitioners of medicine. The Division functions in a positive way to assure the quality of products, rather than merely policing traffic in biologics. The aim is to further the application of the new materials to public health and medical practice, at the same time assuring conformance to the best standards for safety and potency applicable on the basis of current knowledge. Standards for safety are enforced by a system of periodic inspections of operations and records and the testing of products when necessary of all establishments that are licensed to sell or exchange biological products, including human blood for transfusion, across State lines.

2. Research on important problems relating to all aspects of production, distribution, use and effects of biological products, insofar as these are concerned with safety, purity and potency.

Control

The basic instrument for the control of "biological products" provided in the Public Health Service Act is that of licensing. The legal requirement for licensing a biological product is that a licence may be issued only upon a showing that standards designed to insure the continued safety, purity, and potency of the product have been met. Both the product and manufacturer are subject to licensing. Once an establishment has been licensed, it is inspected each year to determine continued compliance with standards. In addition, samples and test reports of each batch or lot of a product the manufacturer proposes to distribute are required to be submitted to the Division in the case of all but a few products where this is not deemed necessary for the assurance of safety, purity and potency. Test reports are checked; samples are tested when necessary. The lot in question is not distributed until a letter of authorization or release is issued by the Division.

During a recent 12-month period over 36,000 control tests were performed by Division personnel on the 3,559 lots submitted for release. This gives no idea of the total effort involved, however, since tests requiring a few minutes are given the same weight as those taking a month or more to complete.

The control activities of the Division require, also, the maintenance of a large number of different standard and reference materials. These are prepared in the Division or obtained by purchase. They are all tested in the Laboratories of DBS and distributed as needed. During fiscal 1966, over 7,000 such preparations were sent out to commercial establishments, health departments, universities and research organizations.

During 1966, thirty-four members of the scientific staff performed the required annual inspections. Sixty-five scheduled inspection trips were completed covering 236 licensed establishments, 103 locations, 134 blood donor centers as well as 10 applicants for an establishment license, for a total of 483 inspections.

Investigations

Investigations, in contrast with licensing and inspections, are conducted by the inspectors in the Office of the Director with assistance from laboratory staff when needed for peak loads. Inspections call for the expenditure of predictable periods of time on the part of the people involved and can thus be carried out with minimum dislocation of their other duties. Investigations, on the other hand, are essentially "open ended" with respect to time and must therefore be carried out by people who have this duty as their main function.

During 1966 the legal actions and investigations of possible violations of the Public Health Service Act involved a total of 243 man work days on travel status. One hundred and eighty man work days were devoted to consultations with state and federal officials, criminal trial preparation and participation, and witnesses interviews. The remaining 63 man work days on travel status were spent visiting both licensed and unlicensed establishments for enforcement purposes.

Research

The research activities of the Division cut across many disciplines and fields of interest. New and important techniques in immunochemistry must be exploited in relation to investigations of the induction of antibodies by vaccines, the measurement of various types of antibodies, the relation of the antibodies to protection against disease, and the relation of cellular mechanisms as well as antibodies to the entire immune mechanism. New techniques in virology have placed Division scientists in the forefront of knowledge in regard to viral oncogenesis and to means of measuring attenuation of virus strains for the preparation of vaccines.

Advances in virology are leading rapidly toward the development of new viral vaccines for mumps, para-influenza, rubella (German measles), respiratory syncytial virus, and many others. The unique features of each of these vaccines relative to the pathogenicity of the virus, the culture system, the techniques for assuring absence of adventitious agents, the inactivation techniques, the tests for safety, lack of communicability, and freedom from neurovirulence, etc. require the attention of expert staff.

DBS scientists, to be effective, keep constantly aware of research advances and design their own research activities so as to be prepared for control and testing problems which inevitably come before new or improved products can be entered into general use. Occasionally, because their own work towards these goals provides leads to products, DBS scientists produce an experimental immunogenic agent of their own. This happened recently in the course of work on rubella which was mentioned at last year's hearings. The scientists are continuing their investigative work on the experimental rubella vaccine and are making very desirable progress. This product has been distributed to interested researchers in the scientific community for additional study. It is hoped by all concerned that a safe, pure and potent vaccine will be available to the public within a reasonable time.

The same research team has recently developed simple, rapid and inexpensive hemmagglutination inhibition test for rubella antibodies. It is presently engaged in further perfecting this test, the widespread use of which could speed up work on rubella.

1967 and 1968 program plans

With the last year the contracts program, stimulated by findings obtained within the last few years of the tumor-producing capabilities of various viruses, has been organized into a series of testing and research projects designed to answer problems of oncogenesis (the production of tumors) in relation to biological products. Work has already been initiated on tests of viral vaccines in the conventional test systems. Various studies are under way on methods for the detection of latent viruses in tissue culture cell preparations used for vaccine production, on adjuvant preparations purported to enhance immunogenicity of vaccines, and on chemicals added to inactivate viruses or to stabilize biologicals. Many of these, because of the inherent nature of the problems, are long-range projects which will require at least several years for their final results. Some of these projects will require the production and use of newborn animals, which in the case of monkeys and dogs, will entail a considerable expenditure. Furthermore, in the analysis of cell chromosomes for example it will be necessary to exploit automated methods to the extent they are available, and possibly to invest in the development of additional graphic analysis techniques.

The initial expenditures of funds for this program were, of necessity, committed relatively late, because the conceptual development of a coordinated program of research and testing required a large percentage of the time and effort of Division staff. The program is gaining momentum, and there will be need for additional funds for additional projects and for confirmatory tests and tests of many new combinations of ingredients not included in the first protocols to obtain the precise information required. The "state of the art" in the entire field of viral and chemical oncogenesis is advancing so rapidly on many fronts that there is little doubt that new findings will require new investigations to assure the safety of biological products in these respects. In this budget, an additional \$300,000 is requested to further the oncogenic program.

The Division has acquired additional facilities in 1967 and present space will be renovated in 1968; the budget contains no provision for additional funds or positions to expand the present staff. However, with expansion of physical facilities, the Division's scientists will have more desirable working conditions which will contribute to productivity. Of the \$260,000 requested for equipment, \$175,000 is required to equip renovated space in the present building and \$85,000 is for specialized research equipment.

The 1968 total request is \$60,000 less than the total obligations and balance in 1967. The unobligated balances resulting from the reserve in 1967 are \$229,000, which, if removed from the base leaves a net increase requested for obligations only of \$169,000. This net increase includes \$560,000 for the expansion of programs as described above, \$24,000 for mandatory items such as annualization of positions new in 1967 and annualization of the wage board pay increase, \$184,000 for centrally furnished services from the National Institutes of Health Management Fund, offset by decreases of \$7,000 for one day less of pay in 1968 and \$592,000 for non-recurring items budgeted in 1967 to equip new facilities and renovate existing space.

PREPARED STATEMENT

Senator HILL. Now, Dr. Murray.

We are glad to have you back with us, Doctor. We have had some good testimony this morning. I am sure you will give us some more. You may proceed now in your own way.

Dr. MURRAY. Senator Hill, I have a prepared statement.

With your indulgence I would like to read from it.

Senator HILL. All right. You may proceed.

Dr. MURRAY. Mr. Chairman and members of the committee, it is again a pleasure to appear before you on behalf of the Division of Biologics Standards. First, I would like to outline, if I may, the function of the Division.

FUNCTION OF THE DIVISION

The Division is responsible for establishing and maintaining standards of quality and safety of all biological products that come within the jurisdiction of the Public Health Service.

The term "biological product" means "any virus, therapeutic serum, toxin, antitoxin, or analogous product, or arsenamine or its derivatives applicable to the prevention, treatment, or cure of diseases or injuries of man."

These products include all vaccines, antitoxins, therapeutic serums, allergenic products, and human blood for transfusion, as well as products prepared from human blood.

Because many of these products are derived from living organisms, such as bacteria and viruses, and all by their nature are either potentially dangerous or ineffective if improperly prepared and tested, close surveillance of production and a constant effort to improve quality are essential.

NEED FOR ACTIVE RESEARCH PROGRAM

The development of realistic standards for these products and the exercise of proper control over them can be effective only if backed by an active research program of sufficient flexibility to provide information needed for the formulation of such standards.

Since most biological products cannot be standardized by chemical or physical means, their strength or potency must be tested in relation to established standard or reference preparations. Many of the comparisons must be carried out in animal tests. In order to establish uniformity of potency of these products, the Division provides manufacturers, and others engaged in biologics standardization, with these standard or reference preparations.

ANIMAL TESTS

Senator HILL. I am very much interested in your declaration that many of the comparisons must be carried out in animal tests. You would be surprised over the barrage that has been put on Members of Congress over these years because of the animal tests.

Dr. MURRAY. These animals are mostly mice, guinea pigs, rabbits, and monkeys.

Senator HILL. You don't have to convert me. I am for the animal tests.

Dr. SHANNON. I would like to interject, though, to make the record complete, that many other areas of investigation require the use of large animals. I am told by the Heart Institute that a substantial amount of the work that has led to advanced surgical techniques and an understanding of the circulation has required the use of dogs as the experimental animal.

Many of the advances that we have today, that are responsible for saving countless lives, are as a result of information derived from such experiments.

Senator Hill, I say this because I never miss an opportunity to point out, when the question of the use of animals arises, that the use of these large animals that are commonly thought of as pets—and indeed they are pets of all of us—are an absolute essential for progress in the future as they have been an absolute requirement for progress in the past.

I hope, if these things come up for discussion by the Congress again, that this is borne in mind.

Senator HILL. You know there has been quite a bit of discussion in the last several years.

Dr. SHANNON. Yes.

JOSEPH LISTER

Senator HILL. You can do the testifying and not me but I have been reading a good deal about a man by the name of Joseph Lister. This is the hundredth anniversary of his laying down the great principle of antiseptis.

He had a lot of opposition, you know, to his principles. I think one of his most bitter antagonists was Sir James Y. Simpson who was responsible for the development of chloroform.

He said one thing that enabled him to finally win his battle was the fact that Queen Victoria had an abscess under her arm and he was called in to open the abscess and drain the pus out. He used a carbolic acid spray. She said it was not bad at all, that carbolic acid had a pleasant odor. That helped him to win his battle.

The interesting thing was Queen Victoria was a strong antivivisectionist and she tried to make one out of Lister but she was not successful. He held fast to vivisection.

All right, Doctor.

IMPLEMENTATION OF FUNCTION

Dr. MURRAY. The basic instrument for the control of biological products provided in the Public Health Service Act is that of licensing. The legal requirement is that a license may be issued only upon a showing that standards designed to insure the continued safety, purity, and potency of the product have been met.

Both the product and the manufacturer must be licensed. Once an establishment has been licensed, it is inspected each year, frequently by a team of as many as three Division scientists, to determine continued compliance with standards.

In addition, each manufacturer must submit to the Division, for testing and review, samples and test reports of each batch or lot of the product he proposes to distribute. Test reports are checked; samples are tested when necessary, and the lot in question is not distributed until a letter of authorization is issued by the Division.

There are a few products for which this procedure is not deemed necessary to insure their safety, purity, and potency.

FEW ENFORCEMENT PROBLEMS

In general, there have been few problems of enforcement with the large producing laboratories because of the realization that in matters concerning safety and potency of biological products, the public interest is also the interest of the manufacturer. Moreover, the severity of the penalty which can be exerted—the suspension or revocation of the license—could put an establishment out of business.

With its ultimate objective the protection of the public against unsafe and ineffective biological products of an inherently complex nature, the Division is often confronted with problems which may never be completely solvable. The most successful accomplishments of the Division are represented by those occasions where difficulties are anticipated, headed off, or abated.

The Division necessarily maintains an active interest in products which have long since been routinely accepted by the medical and health professions, and in some instances even forgotten by the majority of scientists working in the field.

DEVELOPMENT OF NEW PRODUCTS

The development of new products, however, which is inevitably accompanied by technical problems, necessarily commands the most attention of both the control and research facilities of the Division. The aim is to make possible the early application of these products to public health and medical practice, while assuring conformance

to the highest standards for safety and potency on the basis of current knowledge.

As the body of scientific knowledge grows, standards for biological products must be adjusted to the more refined "state of the art."

Also, the implications of advancing knowledge must be studied in relation to biologics. For example, data on the phenomenon of virus-induced tumor formation in animals under special circumstances have stimulated work on the significance of these observations in regard to viral vaccines for human use.

RESEARCH

The research activities of the Division cut across many disciplines and fields of interest. New and important techniques in immunochemistry must be explored in relation to investigations on the induction of antibodies by vaccines, the measurement of various types of antibodies, the relation of the antibodies to protection, and the relation of cellular mechanisms as well as antibodies to the entire defense mechanisms of the body.

New techniques in virology, for example, have placed Division scientists in the vanguard of knowledge of such subjects as viral oncogenesis and means of measuring attenuation of virus strains for the preparation of vaccines.

The Division's competence in electron and fluorescent microscopy is being exploited to characterize viruses and associated viral-like particles, and to search for covert viral agents in tissue cultures used for the growth of viruses used for the manufacture of vaccines.

ADVANCES IN VIROLOGY

Advances in virology, especially, are moving rapidly toward the development of new viral vaccines for mumps, para-influenza, rubella, respiratory syncytial illnesses, and other diseases.

Senator HILL. You are really making progress on rubella?

Dr. MURRAY. Yes. The work is proceeding very well.

The unique features of each of these vaccines—the pathogenicity of the virus; the culture system the techniques for inactivation and assuring absence of adventitious agents; the tests for safety, lack of communicability, and freedom from neurovirulence—require intensive study and the attention of an expert staff.

Division scientists must be constantly aware of advances in research, and design their own research activities in preparation for control and testing problems which inevitably arise before new biologic products can be entered into general use.

RUBELLA VACCINE

Because their work toward these goals often provides leads, DBS scientists occasionally produce an experimental immunogenic agent. This happened recently when Division scientists developed the first experimental live attenuated rubella vaccine.

Their investigative work on the vaccine is continuing with very good progress. The vaccine has been distributed to interested researchers in the scientific community as well as to the National Institute of Allergy and Infectious Diseases, in order that it may receive maximum

scientific exposure. It is anticipated that a safe and effective rubella vaccine will be available to the public within a reasonable time.

The same Division research team has recently developed a simple, rapid and inexpensive hemagglutination inhibition test for rubella antibodies. It is presently engaged in perfecting this test, the widespread use of which could speed the development of rubella vaccine.

ONCOGENIC FACTORS IN RELATION TO VACCINE

Another important facet of the Division's research program is the study of the oncogenesis of viruses, and the significance of present knowledge in this field relative to the safety of viral products.

A considerable portion of the program is organized in contractual projects to extend the work being done in the Division's own laboratories. This contract program covers aspects that are of special importance to biologics. Other organizations are, of course, pursuing this important subject from many other standpoints.

Division scientists are concentrating on developing methods for the detection of tumor viruses. Special techniques must be devised to reveal covert or latent viruses.

This is of special importance to vaccine development. Viruses must be grown on living cells, for example, in animals, eggs, or tissue cell culture. Even if a virus itself is nononcogenic, the culture system may contain covert agents. These agents may grow very slowly in the culture, if at all, producing no discernible effect on the culture cells.

Techniques, such as immunofluorescence or the use of certain types of metabolic inhibitors, are being explored to see if these will help in revealing their presence. Electron microscopy is used to search for virus-like particles in concentrated preparations of tissue culture material.

There is no evidence, at this time, however, from scientific observations and experience with long-established biological products, that their use bears any relation to tumorigenesis in human beings.

Nevertheless, because of the likelihood that, in the years to come, many new viral vaccines will be developed in new tissue culture systems, it is essential that the Division have firmly established knowledge and research competence in this field.

PROGRAM PLANS

The Division's contract program on oncogenesis is just beginning. It will be expanded in scope and content to include testing of additional biological products, screening of suspect materials for covert viruses by presently available techniques and the development of new ones.

Means will be sought for determining oncogenic effects more rapidly than is now possible.

The study of the ingredients of plastics will be extended to determine possible oncogenic effects as well as the deleterious effects already observed on blood reagents. The 1968 budget contains a request for an additional \$300,000 to extend the contract program on oncogenicity.

IMPEDIMENTS TO PROGRESS

There are areas of research on biologics in which impediments to progress exist. To some extent, the impediments are economic. This is true of rarely used products such as botulism type E antitoxin, antivenin for coral snake bites, and trichinosis antigen.

Economic impediments, as represented by the investment required for research to develop and produce a product for prospective markets, also exist for some of the arbovirus vaccines.

While the development of such products for general use is usually outside the focus of the Division's principal responsibility, nevertheless, the need for their development is recognized.

For example, the Division has available for emergencies a standard antitoxin preparation for botulism type E. Similar standards are being sought for coral snake antivenins.

ANNEX TO BUILDING 29

The Division personnel are gradually moving into the extended quarters as they become available with the completion of the annex to Building 29.

Senator HILL. You mean the Public Health Service has not taken this?

Dr. GEHRIG. We had not known about it.

Senator HILL. I thought you might be afraid that he would use those viruses on you.

Go ahead, Doctor.

FUNDS REQUESTED FOR EQUIPMENT

Dr. MURRAY. -In this regard, funds in the amount of \$175,000 are being requested to equip the renovated space in Building 29. In addition, \$85,000 is requested for procuring specialized equipment, such as an electron microscope.

CONCLUSION

In conclusion, the request of the Division of Biologics Standards for 1968 is \$8,649,000 compared with \$8,480,000 available in 1967.

I shall be glad to attempt to answer any questions you may have.

BUDGET BUREAU REDUCTION

Senator HILL. Now the Budget Bureau cut your request some \$631,000, did it not?

Dr. MURRAY. Yes.

Senator HILL. What will be the effect of that?

Dr. MURRAY. This will, of course, slow down the continued full implementation of the program which was anticipated but we realize what the problems are here. The only real damage, I think, over the long haul will be if this were to represent a complete setback.

What I mean is that in future years we will obviously need additional funds.

Dr. SHANNON. I think what it will do is to slow up occupancy of the new quarters.

What Dr. Murray is really saying is that if they can look forward to eventually occupying this space with the essential functions for

which it was built, the present budget limitation is less important than if it were to constitute a ceiling that would obtain for a number of years. This would have a serious impact on the development of the program.

Senator HILL. If you did not move forward in other years; is that right?

Dr. SHANNON. Yes.

Senator HILL. So far as this coming fiscal year it will not be too serious?

DEFERRAL OF WORK

Dr. SHANNON. It is a slowdown that the Division would prefer not to have but it won't have a long-term deleterious effect. It will just prevent us from doing some work next year that will have to be deferred.

Dr. MURRAY. And it imposes additional workloads and responsibilities on the existing staff and personnel and takes them away from other things that they should be doing.

Senator HILL. And would be doing if you had this money that you requested?

Dr. MURRAY. That is correct.

Senator HILL. The Budget Bureau has allowed you a little less than you had this year?

Dr. MURRAY. That is correct.

However, I should remark on that that a substantial amount in the present year's budget was nonrecurring.

Senator HILL. For equipment?

Dr. MURRAY. Yes.

Senator HILL. You would not have to replace that equipment this year?

Dr. MURRAY. No.

ADDITIONAL FUNDS FOR EXPANSION

Dr. SHANNON. The budget does provide some additional funds for expansion of the activity.

Senator HILL. It does provide some expansion?

Dr. SHANNON. Yes. It does not provide funds for the optimal use. As a matter of fact, the original guidelines given the Division concerning the use of the new facilities for the present budget year stated that they should not plan to occupy them all but to reserve a percentage for 1968 and to complete occupancy in 1969 and 1970. So there is substantial room for growth of Dr. Murray's enterprise and this is what concerns him at this time—essential growth to discharge the function. I am less concerned with keeping Dr. Murray happy than I am concerned with his running an effective organization.

Senator HILL. Doctor, you have brought us another splendid statement. We want to thank you and express our appreciation to you.

Dr. MURRAY. Thank you.

SUBCOMMITTEE RECESS

Senator HILL. The subcommittee will now stand in recess.

(Whereupon, at 12:45 p.m., Thursday, April 27, 1967, the subcommittee was recessed, to reconvene at the call of the Chair.)

DEPARTMENTS OF LABOR AND HEALTH, EDUCATION,
AND WELFARE, AND RELATED AGENCIES APPRO-
PRIATIONS FOR FISCAL YEAR 1968

MONDAY, MAY 1, 1967

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:05 a.m., in room 1223, New Senate Of-
fice Building, Hon. Lister Hill (chairman) presiding.
Present: Senator Hill.

NATIONAL CANCER INSTITUTE

STATEMENT OF DR. KENNETH M. ENDICOTT, DIRECTOR; ACCOM-
PANIED BY ROBERT E. LEARMOUTH, EXECUTIVE OFFICER; AND
EARLE L. BROWNING, BUDGET OFFICER; DR. JAMES A. SHAN-
NON, DIRECTOR; RICHARD L. SEGSEL, EXECUTIVE OFFICER;
AND LELAND B. MAY, ACTING FINANCIAL MANAGEMENT OFFI-
CER, NATIONAL INSTITUTES OF HEALTH; DR. LEO J. GEHRIG,
DEPUTY SURGEON GENERAL; CHARLES MILLER, CHIEF FI-
NANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT
SECRETARY, BUDGET

APPROPRIATION ESTIMATE

NATIONAL CANCER INSTITUTE

To enable the Surgeon General, upon the recommendations of the National
Advisory Cancer Council, to make grants-in-aid for research and training projects
relating to cancer; and to otherwise carry out the provisions of title IV, part A,
of the Act; **[\$175,656,000] \$183,356,000.**

Amounts available for obligation

	1967	1968
Appropriation.....	\$175,656,000	\$183,356,000
Comparative transfers within NIH.....	-2,763,000	
Comparative transfer to, "Office of the Secretary".....	-112,000	
Transferred to "Operating expenses, Public Buildings Service," General Services Administration.....	-13,000	
Total.....	172,768,000	183,356,000

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Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Grants:						
Research.....		\$77,550,000		\$83,317,000		+\$5,767,000
General research support grants.....		(5,793,000)		(7,110,000)		(+1,317,000)
Scientific evaluation grants.....		(151,000)		(151,000)		0
Specialized research centers.....		(12,590,000)		(12,590,000)		0
Leukemia research support.....		(1,500,000)		(1,500,000)		0
Life island units.....		(600,000)		(600,000)		0
Fellowships.....		4,170,000		4,326,000		+156,000
Training.....		11,068,000		11,350,000		+282,000
Direct operations:						
Laboratory and clinical research.....	502	14,776,000	515	16,065,000	+13	+1,289,000
Collaborative research and develop- ment.....	714	59,815,000	737	62,985,000	+23	+3,170,000
Biometry, epidemiology, and field studies.....	115	1,370,000	117	1,410,000	+2	+40,000
Review and approval of grants.....	115	2,449,000	115	2,588,000	0	+139,000
Program direction.....	57	1,257,000	59	1,315,000	+2	+58,000
Total obligations.....	1,503	172,455,000	1,543	183,356,000	+40	+10,901,000
Unobligated balance, reserve.....	0	313,000	0	0	0	-313,000
Total obligations and balance.....	1,503	172,768,000	1,543	183,356,000	+40	+10,588,000

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Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
PUBLIC HEALTH SERVICE			
Total number of permanent positions.....	1,421	1,461	+40
Full-time equivalent of other positions.....	10	15	+5
Average number of all employees.....	1,371	1,440	+69
Personnel compensation:			
Permanent positions.....	\$12,332,000	\$12,822,000	+\$490,000
Positions other than permanent.....	75,000	75,000	0
Other personnel compensation.....	120,000	120,000	0
Total personnel compensation.....	12,527,000	13,017,000	+490,000
Personnel benefits.....	1,253,000	1,302,000	+49,000
Travel and transportation of persons.....	535,000	550,000	+15,000
Transportation of things.....	130,000	150,000	+20,000
Rent, communications, and utilities.....	400,000	400,000	0
Printing and reproduction.....	450,000	450,000	0
Other services.....	2,787,000	3,000,000	+213,000
Project contracts.....	47,771,000	49,827,000	+2,056,000
Payment to "National Institutes of Health management fund".....	8,536,000	9,689,000	+853,000
Supplies and materials.....	2,600,000	3,000,000	+400,000
Equipment.....	1,400,000	2,000,000	+600,000
Grants, subsidies, and contributions.....	92,788,000	98,993,000	+6,205,000
Subtotal.....	171,477,000	182,378,000	+10,901,000
Deduct quarters and subsistence charges.....	10,000	10,000	0
Total, Public Health Service.....	171,467,000	182,368,000	+10,901,000
ALLOCATION TO VETERANS' ADMINISTRATION			
Total number of permanent positions.....	82	82	0
Full-time equivalent of other positions.....	15	15	0
Average number of all employees.....	95	95	0
Personnel compensation:			
Permanent positions.....	\$617,000	\$618,000	+\$1,000
Positions other than permanent.....	135,000	135,000	0
Other personnel compensation.....	1,000	1,000	0
Total personnel compensation.....	753,000	754,000	+1,000
Personnel benefits.....	57,000	57,000	0
Travel and transportation of persons.....	91,000	91,000	0
Transportation of things.....	2,000	2,000	0
Rent, communications, and utilities.....	1,000	1,000	0
Other services.....	6,000	6,000	0
Supplies and materials.....	31,000	31,000	0
Equipment.....	47,000	46,000	-1,000
Total, Veterans' Administration.....	988,000	988,000	0
Total obligations by object.....	172,455,000	183,356,000	+10,901,000

Summary of changes

1967 enacted appropriation.....	\$175,656,000
Unobligated balance, reserve.....	-313,000
Comparative transfers within NIH accounts.....	-2,763,000
Comparative transfer to "Office of the Secretary, salaries and expenses".....	-112,000
Transferred to "Operating expenses, Public Buildings Service," General Services Administration (space rental).....	-13,000
1967 total estimated obligations.....	172,455,000
1968 estimated obligations.....	183,356,000
Total change.....	+10,901,000

Summary of changes—Continued

	Base		Changes from base	
	Posi- tions	Amount	Posi- tions	Amount
INCREASES				
A. Built-in:				
1. Annualization of new positions authorized in 1967				\$98,000
2. Annualization of wage-board salary increases				10,000
Subtotal, built-in increases				108,000
B. Program:				
1. Research grants		\$77,550,000		5,767,000
2. Fellowships		4,170,000		156,000
3. Training		11,068,000		282,000
4. Laboratory and clinical research	502	8,405,000	13	629,000
5. Collaborative research and development	714	58,846,000	23	3,053,000
6. Biometry, epidemiology and field studies	115	1,214,000	2	25,000
7. Review and approval of grants	115	1,497,000		44,000
8. Program direction	57	869,000	2	32,000
Subtotal, program increases			40	9,988,000
C. Payment to "National Institutes of Health management fund" for centrally furnished services:				
1. Laboratory and clinical research		6,371,000		622,000
2. Collaborative research and development		969,000		106,000
3. Biometry, epidemiology and field studies		156,000		11,000
4. Review and approval of grants		952,000		97,000
5. Program direction		388,000		17,000
Subtotal, management fund increases				853,000
Gross increases			40	10,949,000
DECREASES				
A. 1 less day of pay (261 days in 1967, 260 days in 1968)				-48,000
Total net changes requested			+40	+10,901,000

EXPLANATION OF CHANGES

Research grants.—The program increase of \$5,767,000 will provide \$4,450,000 for regular program grants and \$1,317,000 for general research support grants.

Fellowships.—The program increase of \$156,000 will provide \$31,000 for post-doctoral fellowships, \$120,000 for special fellowships, and \$135,000 for research career development awards. These increases are offset by a decrease of \$130,000 in career awards which are being phased out.

Training.—The program increase of \$282,000 is requested to strengthen the graduate training program.

Laboratory and clinical research.—The program increase of \$629,000 is requested to support 13 new positions and the cost of setting up operating laboratories when the new building is completed. Primary emphasis will be on expansion of research in cell biology, developmental biology and immunology.

Collaborative research and development.—The program increase of \$3,053,000 is requested for support of 23 new positions and expanded contract programs in the areas of carcinogenesis, viral oncology, clinical trials, and experimental therapeutics, and would also provide increases for the special virus-leukemia program and breast cancer activities. Positions and funds are also included for the move to the new cancer building and supporting services in the new building. Recently established task forces on breast cancer, solid tumors, and lung cancer will continue in operations in 1968.

Biometry, epidemiology and field studies.—The program increase of two positions and \$25,000 would be used to initiate a 10 city survey of the incidence, prevalence and mortality of cancer in the United States.

Review and approval of grants.—The program increase of \$44,000 will support the added cost of reviewing the increased grant and contract programs.

Program direction.—The program increase of 2 positions and \$32,000 is requested to augment the planning, programming and budgeting and program analysis functions.

Research grants

	1967 estimate	1968 estimate	Increase or decrease
Research projects.....	\$56,916,000	\$61,366,000	+\$4,450,000
Special programs.....	20,634,000	21,951,000	+1,317,000
Total research grants.....	77,550,000	83,317,000	+5,767,000

Introduction

Research grant funds support activities in the cancer field within universities, hospitals, laboratories, research institutes, and other public or private nonprofit institutions. The purpose of these grants is to stimulate new investigations in fields where further exploration seems likely to be fruitful. The projects range from small, circumscribed activities to broad composite programs that integrate the research interests of many investigators in a variety of scientific disciplines. These grants make possible complex clinical research which would otherwise not be accomplished for many years.

Program plans in 1967

Grant-supported research will continue to place emphasis on studies of the biology and chemistry of growth, reproduction and differentiation of the normal malignant cell. It will include, also, extensive studies on various kinds of cancer in laboratory animals, along with individual studies of the cancer patient, and cancer in populations.

The Institute will support projects aimed at developing methods for identification of carcinogenic agents and hazards in man's total environment; atmosphere, water, food, drugs, tobacco, other natural products, occupation, radiation and infectious agents. Studies aimed at the viral etiology of malignant diseases will be emphasized. Grants will also support studies of various forms of therapy, especially chemotherapy and related pharmacologic studies of neoplastic diseases. Other studies will be devoted to radiobiology, especially the application of tools and techniques from experimental radiobiology to radiation therapy so that cancer cells can be made more sensitive to radiation and normal cells less affected thereby increasing the effectiveness of radiation therapy. Since there is increasing evidence that cancer is essentially a cell disease, research efforts will be broadened to cover both extrinsic and intrinsic factors which might be involved in the cancerous change. The areas to receive expanded support will include cell biology, carcinogenesis and clinical research.

The programmed chemotherapy grant will continue to provide support for clinical studies performed under established protocols to evaluate new agents for use as therapeutic materials for various types of malignancies.

Approximately 35 leukemia research support centers will be funded in 1967. These centers will continue to study new research therapy techniques involving new drugs and blood platelet transfusions to patients on both an outpatient and inpatient basis.

Cancer Institute grants now support 20 specialized research centers. These centers are now beginning to emphasize research on host defense mechanisms against tumors, the effect of cytotoxic drugs on immune responses, and attempts to define more precisely the mechanism of the action of anticancer agents. Furthermore, studies of radiation biology, physics, and nuclear medicine have been expanding. Much attention is being given to determinations of the optimum methods of employing chemotherapeutic drugs and other forms of therapy, and to the use of radiation as an adjuvant to surgery and chemotherapy. The funds for 1967 will allow increased support for existing activities plus the inauguration of several new installations. The specialized research centers item also includes planning grants which support costs incurred by institutions in the development of long-term plans for cancer research, training, and clinical service. In the 1967 budget, the centers were identified as "Categorical clinical research centers" (\$7,790,000) and the planning grants were identified "Specialized research centers" (\$800,000).

The \$600,000 available for life islands and related reverse isolation units such as laminar flow units will be sufficient to provide continued support to the six active grants. Life islands are enclosures in which patients are kept in essentially a germ free environment. Laminar flow units also isolate the patient

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through devices to control the flow of air. These are of interest because cancer drug dosages can be increased to higher levels in such environments without a corresponding increase in side reactions.

Program plans in 1968

The \$40,228,000 earmarked for support of non-competing continuations projects contains an increase of \$2,580,000 over the 1967 level of support, representing 15 additional grants which will have a moral commitment during 1968.

The \$17,173,000 requested for competing projects includes \$10,278,000 for new regular research grants, which is an increase of \$3,675,000 over the 1967 level of support for new grants. This increase permits the awarding of an additional 73 new awards in 1968.

The increase in new grants is partially offset by an estimated decrease in competing continuations of \$1,993,000 and 53 grants. The net figure for competing grants is therefore an increase of 20 grants and \$1,682,000. The major factor in these items is the cyclical pattern of the termination and subsequent renewal of continuations. The variance can be large from one year to another. Supplemental grants are expected to require some \$188,000 more in 1968. The overall net increase in 1968 over 1967 for regular project grants is estimated at 35 grants and \$4,450,000.

High priority will be given to support of research in the following areas: 1) studies aimed at determining the relationship between man's environment and his liability to malignant diseases, 2) research in the field of clinical pharmacology with particular emphasis on early diagnosis through specialized instrumentation, 3) research aimed at the development of better forms of treatment, 4) studies of viruses and their role in causing malignant disease, and 5) research relating to the development and application of tools and techniques for experimental radiobiology and radiation therapy.

The programmed chemotherapy grant program will remain at the same level in 1968, continuing to support the efforts of study groups operating under highly developed protocols.

The specialized research centers program will continue at the same dollar level in 1968. The increase from 36 to 40 grants is possible because some recently initiated grants which required high "start up" costs will need only operating funds in 1968.

The leukemia research support centers are expected to continue at the same level in 1968 as in 1967. Funding requirements will be mainly for 27 non-competing continuations, the result of grants awarded in 1966 and 1967. In 1968 anticipated increases in the number of applications will allow greater latitude in funding selectivity. Further evidence will be accumulated regarding platelet replacement therapy and its use as an effective tool in connection with the administration of control drugs.

In 1968 the life island program is expected to continue at the same level. The techniques of reverse isolation will continue to be studied in combination with chemotherapy and radiation techniques.

Research grants program analysis

Fields	1967 estimate	1968 estimate	Increase or decrease
Cancer causation.....	\$13,027,000	\$14,202,000	+\$1,175,000
Tumor growth.....	11,655,000	12,706,000	+1,051,000
Host-tumor relationship.....	2,895,000	3,156,000	+261,000
Epidemiology.....	1,559,000	1,699,000	+140,000
Diagnosis.....	1,074,000	1,171,000	+97,000
Therapy.....	11,644,000	12,694,000	+1,050,000
Basic research and other 1.....	10,719,000	11,395,000	+676,000
Programed chemotherapy.....	4,343,000	4,343,000	0
Subtotal, regular program.....	56,916,000	61,366,000	+4,450,000
General research support grants.....	5,793,000	7,110,000	+1,317,000
Scientific evaluation grants.....	151,000	151,000	0
Specialized research centers.....	12,590,000	12,590,000	0
Leukemia research support centers.....	1,500,000	1,500,000	0
Life island units.....	600,000	600,000	0
Total, research grants.....	77,550,000	83,317,000	+5,767,000

¹ Includes Sloan-Kettering single instrument grant

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Distribution of research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations.....	870	\$37,648,000	885	\$40,228,000	+15	+\$2,580,000
2. Competing projects.....	355	15,491,000	375	17,173,000	+20	+1,682,000
3. Supplementals.....	(175)	3,777,000	(180)	3,965,000	(+5)	+188,000
4. Subtotal, regular program.....	1,225	56,916,000	1,260	61,366,000	+35	+4,450,000
5. General research support.....		5,793,000		7,110,000		+1,317,000
6. Scientific evaluation.....		151,000		151,000		0
7. Specialized research centers.....		12,590,000		12,590,000		0
8. Leukemia research support centers.....		1,500,000		1,500,000		0
9. Life island units.....		600,000		600,000		0
10. Total, research grants.....		77,550,000		83,317,000		+5,767,000

Fellowships

	1967 estimate	1968 estimate	Increase or decrease
Total fellowships.....	\$4,170,000	\$4,326,000	+\$156,000

Introduction

The purpose of the fellowships program is to increase the supply of investigators and teachers trained in basic and clinical sciences related to the field of cancer research. The program provides research training to individuals whose career development extends from the immediate post doctoral period through the advanced stages of scientific attainment. Post doctoral awards are made to qualified individuals with doctorate degrees but with little or no previous experience. Special fellowships are awarded to qualified individuals who have had at least three years post doctoral research or professional experiences.

This budget activity also supports two other types of awards made to institutions for the purpose of increasing the number of stable, full career opportunities for scientists of high potential and capability in disciplines important to cancer research. The Research Career Development awards support investigators who require 5 to 10 years experience in order to improve their research skills and to develop a capability for independent investigation. Research career awards are made to established investigators of high quality for the duration of their research careers.

Program plans in 1967

In 1967 the number of awards in both the Postdoctoral and Special categories will remain fairly stable. As in the past, the Institute will select qualified individuals for specialized research training in such fields as immunology, biochemistry, cytogenetics, endocrinology, virology, and pathology. Continued emphasis will be given to encouraging interest and increasing training in the critical shortage areas of radiation therapy, surgery, hematology, and clinical pharmacology and toxicology.

As a result of the NIH decision not to make additional Research Career awards, Research Career Development awards have and will continue to take on increased significance which will be reflected in modest but progressive increases in the number of awards made.

Program plans in 1968

With the requested increase of \$156,000, the Institute plans to add a net of 8 special fellowships for candidates interested in the research aspects of radiation, therapy, surgery, hematology, and clinical pharmacology and toxicology. The remainder will be applied to the moderately expanding development program and will be sufficient for funding a net increase of 13 Research Career Development awards. These increases are offset by decreases of 5 postdoctoral and 6 career awards.

Distribution of fellowships

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Continuations:						
(a) Noncompeting.....	123	\$1,980,000	185	\$2,970,000	+62	+\$990,000
(b) Competing.....	84	925,000	31	283,000	-53	-642,000
2. Supplementals.....	0	0	0	0	0	0
3. New awards.....	146	1,265,000	147	1,073,000	+1	-192,000
4. Total fellowships.....	353	4,170,000	363	4,326,000	+10	+156,000

Fellowships (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Postdoctoral.....	138	\$890,000	133	\$921,000	-5	+\$31,000
2. Special.....	97	955,000	105	1,075,000	+8	+120,000
3. Research career:						
(a) Career.....	18	477,000	12	347,000	-6	-130,000
(b) Development.....	100	1,848,000	113	1,983,000	+13	+135,000
4. Total fellowships.....	353	4,170,000	363	4,326,000	+10	+156,000

Training grants

	1967 estimate	1968 estimate	Increase or decrease
Total training grants.....	\$11,068,000	\$11,350,000	+\$282,000

Introduction

Graduate research training grants are made to institutions to help provide an adequate supply of competent research manpower, and to alleviate critical shortages of professional personnel in selected areas affecting the combination of research, teaching, and service. In addition to underwriting expenses for equipment, supplies, and training staff, these grants may provide stipends for individuals in training for a wide diversity of fields related to cancer research. Clinical cancer training grants assist qualified institutions in improving and expanding training in the prevention, diagnosis, treatment, rehabilitation, and public health aspects of cancer. The threefold purpose of these grants is to encourage institutions to: 1) upgrade the quality of cancer instruction offered to undergraduate and graduate medical, dental, and public health students and to interns, residents, clinical fellows, and practitioners; 2) broaden the scope and content of current cancer teaching; and, 3) undertake innovations in methods for teaching the clinical and public health aspects of comprehensive cancer management.

Program plans in 1967

Approximately 157 programs will be supported during the current year. Continued emphasis will be given to training in clinical pharmacology and chemotherapy, including the trial of new chemotherapeutic agents and new dosages, development of evaluative criteria for small effects and objective assay of the response of cancer cells to agents. Emphasis will be placed on establishing additional programs of clinical research training as well as conventional graduate programs in disciplines where cancer researchers are in short supply. Also, programming efforts will be strengthened in: 1) radiobiology and radiotherapy, 2) experimental surgery and physiology, 3) virology, and 4) nuclear medicine.

Program plans in 1968

The 1968 request includes the support of 8 new programs as compared with 17 in 1967 for a net decrease of 9 grants. Continuing programs being renewed in 1968

will increase by 17. This allows a net increase of 9 cancer clinical training grants offset by a decrease of 1 graduate grant. However, the entire \$282,000 increase will be used to support the increased cost of established graduate programs. The renewal cost of the existing but relatively new cancer clinical training programs will be reduced to allow for the net increase of 9 grants.

Distribution of training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Continuations						
(a) Noncompeting.....	125	\$8,399,000	139	\$9,591,000	+14	+\$1,192,000
(b) Competing.....	15	939,000	18	970,000	+3	+31,000
2. Supplementals.....	(12)	600,000	(6)	139,000	(-6)	-461,000
3. New program.....	17	1,130,000	8	650,000	-9	-480,000
4. Total training grants.....	157	11,068,000	165	11,350,000	+8	+282,000

Training grants (by program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Graduate.....	82	\$5,598,000	81	\$5,880,000	-1	+\$282,000
2. Cancer clinical training.....	75	5,470,000	84	5,470,000	+9	0
3. Total training grants.....	157	11,068,000	165	11,350,000	+8	+282,000

Laboratory and clinical research

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	502	\$5,005,000	515	\$5,181,000	+13	+\$176,000
Other expenses.....		9,771,000		10,884,000		+1,113,000
Total.....	502	14,776,000	515	16,065,000	+13	+1,289,000

Introduction

The research programs within this activity are directed toward providing a basic understanding of the cancer process. Such research is broadly based in order to achieve adequate coverage and integration of knowledge applicable to the problems of cancer. Emphasis, however, is placed on certain areas of research which appear to have special relevance or which require greater attention because of the particular nature of the problem involved. It is recognized that this type of probing research will constantly change to take advantage of new information that may be of use to any of the research areas involved, or that may be exploitable for possible practical control of cancer in man.

Since cancer attacks all parts of the body and all body systems with many variations, it must be studied from many scientific points of view. Laboratory and Clinical Research, therefore, covers a range extending from the molecular level to the clinical level, reflected by the internal organization according to traditional disciplines—i.e. biochemistry, biology, physiology, pathology, etc.

Program plans in 1967

Scientists in these laboratories are building up the knowledge of body chemistry, of cell growth and reproduction, of host resistance to tumors and how the body regulates cell growth. Through this knowledge gradually acquired will

come answers that will eventually help to prevent or treat cancer. Animal model systems developed in these intramural labs are the foundation for the more direct attack on cancer carried on as collaborative programs.

Currently under increasing attention are immunologic factors possibly important in the causation and course of cancer, and perhaps exploitable in its control. Some evidence to date has suggested certain immunologic aberrations may be conducive to the beginning and development of the cancer process. Possibly of greater importance is other evidence indicating that the immunologic defenses normally operate to control the disease. Although it is not known how frequently a malignant tumor is spontaneously controlled by the immunologic defenses of the body, it is known from animal studies that the development and transplantability of some viral-induced cancers can be prevented by immunologic means. While it may be expected that immunologic modalities in the future will be found to be therapeutically useful in the treatment of human cancer, there is insufficient evidence to warrant undertaking therapeutic trials in man at this time.

Program plans in 1968

The established laboratories organized on a discipline basis will continue to pursue new leads, as knowledge in their disciplines provides new opportunities.

An urgent need exists for a substantial amount of research assessing the degree to which immunologic factors actually operate in the spontaneous control of human cancer. Expansion of research facilities and capabilities to accomplish this is incorporated into the program plans for the immediate future.

Malignant transformation of the cell, the fundamental change by which a cell becomes cancerous, will receive greater emphasis. While it is known that a number of environmental agents are carcinogenic, the specific effects on the cell that cause its transition from a normal to a malignant cell need to be clarified. Extension of ongoing research is required to determine whether other agents, such as radiation and chemicals, can cause malignant transformation of a cell by themselves or whether the presence of a virus is also necessary.

Further expansion of research in cell biology and developmental biology is projected to acquire new knowledge on the natural controls involved in the normal differentiation and maturation of cells during the period of embryonic development. Little success has been achieved in the past in mounting and maintaining a continued research program due in part to the shortage of scientists trained in these areas. Efforts are being directed toward bringing into this research area scientists who have been trained in the technologies that have developed out of nucleic acid and protein research.

The program increase \$629,000 and 13 positions for 1968 would permit pursuit of ongoing research and the extension and undertaking of the programs described above. Included in this program increase are funds for the move into the new building and for the renovation of laboratory space thereby made available for improved clinical research in the Clinical Center.

An increase of \$38,000 is requested for mandatory items such as annualization of positions new in 1967 and annualization of wage-board pay increase in 1967, offset by one less day of pay in 1968 and non-recurring items. There are also increases of \$622,000 for centrally furnished services from the "National Institutes of Health Management Fund."

Collaborative research and development

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	714	\$6,022,000	737	\$6,333,000	+23	+\$311,000
Other expenses.....		53,793,000		56,652,000		+2,859,000
Total.....	714	59,815,000	737	62,985,000	+23	+3,170,000

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Introduction

The programs under Collaborative Research and Development are national efforts utilizing the contract research mechanism as well as investigations carried on directly in institute laboratories, to concentrate on major problems relevant to cancer. The research projects within the programs under this activity are interrelated, and changes in emphasis or major developments may cause a number of changes in many projects as their contributions of progress toward program goals are evaluated.

The National Cancer Institute established the Etiology and Cancer Therapy areas under this activity to provide strong central leadership and responsibility for carefully planned research activities. The etiology programs are focused on causes of cancer, the patterns of cancer occurrence and their prevention. The therapy programs are concerned with finding the method of treating cancer through drugs and radiation.

The following table indicates level of support by these major program areas:

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Etiology.....	272	\$28,715,000	280	\$30,724,000	+8	+\$2,009,000
Cancer therapy.....	380	29,042,000	390	29,686,000	+10	+644,000
Supporting services.....	62	1,089,000	67	1,500,000	+5	+411,000
National Institutes of Health manage- ment fund.....		969,000		1,075,000		+106,000
Total, collaborative studies.....	714	59,815,000	737	62,955,000	+23	+3,170,000

Etiology

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Total.....	272	\$28,715,000	280	\$30,724,000	+8	+\$2,009,000
Office of the Scientific Director.....	43	801,000	43	801,000	0	0
Carcinogenesis.....	85	1,336,000	87	1,687,000	+2	+351,000
Viral oncology.....	88	1,215,000	94	1,613,000	+6	+398,000
Etiology contracts.....		10,717,000		11,417,000		+700,000
Special virus-leukemia.....	56	14,646,000	56	15,206,000	0	+560,000

Introduction

The Etiology Area is charged with responsibility for the major share of the Institute's programmed research on cancer causation and prevention, including the major portion of the Special Virus-Leukemia Program. Its investigations extend from the study of defined human and animal populations, to studies under laboratory conditions of the fundamental aspects of growth and metabolism in living systems. Scientists are responsible not only for their individual research, but also for provision of strong central leadership in the conceptualization, design, and implementation of an imaginative and integrated attack upon these problems, in collaboration with other investigators in this country and abroad.

Central to the Etiology Area's approach is the concept of an interaction of multiple causative factors contributed by man as a host and his environment. The Demography programs (described in detail under "Biometry, Epidemiology and Field Studies") are designed to analyze defined populations having unusual risks to specific cancers or known exposure to high risk environments, in order to reveal statistically significant cause-and-effect associations and disassociations leading to the discovery of etiologic factors and agents. The experimentally oriented units of the Etiology Area select and combine, under carefully controlled conditions, those host and environmental factors which appear to be significant in cancer etiology. From this point, they proceed to verify or deny such significance by success or failure in producing cancer in animals. It may then

be seen that the synthetic approach on one hand and the analytical approach on the other are purposely united in the Etiology Area to complement one another.

Program plans in 1967

Carcinogenesis

A major concern of the organizational groups funded under this budget activity continues to be an approach to cancer causation through a study of the role of environmental factors. This approach depends upon the characterization of the occurrence and behavior of cancers by specific sites in human populations. The role of environment is investigated by studying cancer characteristics in domestic and foreign populations and in populations migrating between countries with differing environmental conditions.

Collaborative studies, supported by contracts, are being continued in addition to in-house activities aimed principally at the identification and characterization of known and suspected chemical carcinogens, especially those commonly occurring in the human environment. Efforts to improve bioassay methods employed in the identification and characterization of chemical carcinogens with the aim of improving the relevance of animal data to the human situation, and the study of effects of known and potential carcinogens at the cytologic and genetic levels is also a major part of the current programs. Predominant among these activities are the multi-project agreements with the Atomic Energy Commission at Oak Ridge, the Chicago Medical School, and, more recently, New York University.

The activities which emphasize the fundamental nature of the interaction of carcinogenic agents with living systems in the induction of cancer at the host, tissue, cellular, and molecular levels, are progressing in a most satisfactory manner. These studies endeavor to understand the normal molecular functioning of cells and how these processes are altered by agents which induce cancer. They include the effects of cancer-causing viruses, chemicals, and radiation on the genetic composition, and on the transmission and translation of genetic information within the cell. Attempts are made to delineate the molecular mechanism by which normal cells are converted to cancer cells. In addition, the roles of certain inheritable characteristics in humans are being determined in relation to their resistance or susceptibility to various forms of cancer in particular leukemia, cancer of the lung, and cancer of the breast.

Viral Oncology and Special Virus-Leukemia

The three branches within the Viral Oncology Area are staffed with specialists in the scientific disciplines specifically needed to conduct comprehensive basic research on all of the aspects of the virus-cancer relationship, and to manage the related programs of developmental and applied research that are essential to the achievement of the goals of the National Cancer Institute with respect to viral oncology.

The National Cancer Institute's activities in viral oncology may be divided into several major programs, including the Special Virus-Leukemia Program which is a program of experimental work on "fluid" tumors, the program of research on viruses in the induction of "solid" tumors, and the program to devise and develop physical and other resources to facilitate expanded efforts in viral oncology.

This year efforts are being continued in the Special Virus-Leukemia Program to produce, concentrate, and purify viruses derived from human leukemia material in order to conduct animal experiments in leukemogenesis. The acquisition of fresh material from different types of human leukemia and lymphoma has been increased and considerable progress is being made in the development of a computer storage and retrieval system for data obtained on these patients.

The apparent persistent and predominant association of a herpes-like virus in tissue cultures begun from buffy coat or tissue cells of 39 patients from 4 different countries, demands that additional intensive studies be conducted to determine possible etiological significance of this virus type to human leukemia and lymphoma. In particular, within 1967 approximately ten of these cell lines will be selected for propagation in kilogram quantities. The immediate objective of this study is to prepare virus concentrates from these extracted cells, which will then be used in studies to determine their biological, chemical, and physical characteristics. It is anticipated that such materials will permit necessary seroepidemiological surveys designed to determine the comparative distribution of this virus and/or virus antigen material within normal and diseased population groups.

In other programs concerned with viral oncology, scientists continue development of activities designed to study the action of DNA viruses in the induction of "solid" tumors of animals as well as their possible role in the causation of some cancers of man. These viruses, producing tumors in solid tissues as opposed to tissues that produce circulating cells in the blood and lymph, require studies on a broad collaborative scale analogous to those on the leukemia-causing RNA viruses now underway in the Special Virus-Leukemia Program. Plans for this program were formulated in discussions at several meetings of the National Cancer Institute's scientists with the nation's most eminent researchers concerned with the role of DNA viruses in tumor induction. It is the consensus of these scientists and researchers that laboratory techniques and seroepidemiologic methods now available are adequate to insure significant progress in this area.

Electron microscopy also continues to be a major approach to the virus-cancer problem. The electron microscopy staff is playing a key role both in the advancement of basic knowledge and in guiding and monitoring the search for and study of viruses associated with leukemia and other cancers of humans.

Program plans in 1968

Carcinogenesis

During 1968 a net increase of \$651,000 including \$300,000 for contracts and 2 positions is requested to expand and initiate studies concerned with: (1) mechanisms of carcinogenesis at the molecular level; (2) the association of carcinogenesis and teratogenesis as well as concordances of cancer with other systemic non-neoplastic diseases; and, (3) the role of the organs and tissues responsible for the formation of various blood cells and fractions involved in the immunological response of a host to carcinogenesis. Implementation of these activities will take place within the new Cancer Building to be completed early in 1968.

Viral Oncology and Special Virus-Leukemia

A net increase of \$798,000 including \$400,000 for contracts and 6 positions is requested to support an expansion of the electron microscopy effort necessary to meet the increasing demands of the Special Program and others in the field of viral oncology, as well as launch the first major phase of the solid tumor-DNA program, within the new cancer facility.

A net increase of \$560,000 is requested to permit the expansion of efforts in those areas of the Special Virus-Leukemia Program where progress has been made as anticipated in the 5 year projection of activities. Studies will be launched to determine the extent to which viruses of the type now being frequently detected in human leukemia and lymphoma are associated with these human diseases in general, and whether they are causally related thereto. An important part of the proof of the latter will be the reduction of the diseases in vaccinated populations, when the totality of evidence indicates that such vaccination studies are justified. Toward this future eventuality developmental research will be launched on the practical large-scale production of viral antigen, and the devising of stable and efficient vaccines, using one or more of the viruses from human leukemia and lymphoma now available. These activities are critical to the continued advancement of the program.

Cancer therapy

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Total.....	380	\$29,042,000	390	\$29,686,000	+10	+\$644,000
Office of the Scientific Director.....	82	2,000,000	82	2,000,000	0	0
Clinical trials.....	82	733,000	86	833,000	+4	+100,000
Experimental therapeutics.....	42	497,000	48	728,000	+6	+231,000
Cancer Chemotherapy National Service Center.....	64	718,000	64	718,000	0	0
Therapy contracts.....	82	20,592,000	82	20,592,000	0	0
Breast cancer activities.....	12	2,487,000	12	2,800,000	0	+313,000
Special virus-leukemia.....	16	2,015,000	16	2,015,000	0	0

Introduction

The objectives of the Cancer Therapy Program are to find drugs that will cure cancer and to make it possible for physicians to use them safely for the control of all the malignant diseases. The National Cancer Institute's coordinated program has achieved these purposes for several rapidly growing cancers. The methods and principles successful for those few diseases present opportunities for exploitation in the common cancers of man. The program is a coordinated one in that it assumes responsibility for the search for new drugs, their study in animals and patients, research on how the drugs work, and the supply of materials and services to extend the useful drugs to the whole country. In order to accomplish this, the program involves direct research in laboratories and clinics, and the wide use of both contracts and grants in obtaining the assistance of universities and industry.

Program plans in 1967

During the past two years the cost of the Cancer Therapy Program has been reduced by the elimination of contract programs or sharp reduction in certain contracts. The program has been highly streamlined and focused into a clearly defined plan. All new projects initiated during 1967 are being funded through reduction or deletion of existing programs.

Additional research is being performed on improving drug toxicity screens, both quantitatively and qualitatively. This concerns the prediction of a safe dose of a new drug in early clinical trials and the prediction of the specific organ damage to be expected when drugs are given to patients. The relations of chemical structure of antitumor drugs to activity and safety will emerge slowly. The Institute has completed a preliminary survey of the 30 or more chemicals known to be effective in clinical cancer and is now reviewing the structural implications of the 6 most important chemical series. From this analysis will come a chemical synthesis program designed to develop the full picture of structure—activity relations which will lead to more active and less toxic drugs. Similarly, antitumor drugs obtained from natural products are being analyzed in an effort to relate activity to families or genera of plants and ultimately to chemical structure. Analysis indicates that relatively few plant species have been examined and that the animal kingdom is virtually untouched.

In the clinical trials program substantial drug effects, approaching cure, are being observed in acute leukemia, Hodgkin's disease, choriocarcinoma, Burkitt's lymphoma, testicular tumors and childhood solid tumors. These are all rapidly growing tumors. The tumors less susceptible to drugs are considerably slower in growth rates and are requiring the major clinical effort in the search for new drugs.

A Breast Cancer Task Force, constituted during 1967, is directing its activities toward a concerted effort to determine the cause of breast cancer and to determine the best therapy. The Task Force approach has been taken because of the realization that the cure rate of breast cancer has not improved significantly over the past several decades. The program includes both basic and applied research on cause, diagnosis and treatment.

The therapy efforts in the Special Virus-Leukemia Program are coordinated through the Acute Leukemia Task Force which consists of investigators in over 90 institutions participating in a major collaborative and cooperative effort. During 1967, this group continued to develop projects concerned with: 1) the intensification and expansion of research and its application to achieve the ultimate therapeutic objective of the complete destruction of all leukemia cells with tolerable toxicity for the patient, and/or the development of drugs, procedures, regimens, etc. for the prophylactic treatment of "pre-leukemics" and 2) providing to the Resources and Logistics Working Group tissue and plasma specimens from untreated fulminating leukemias, erythroleukemias, et al., for collection, storage, and distribution to other program segments.

Program plans in 1968

In 1968 the renovation of laboratory space at the Baltimore Public Health Service Hospital will be completed and the existing clinical program will be expanded to form an integrated program of laboratory and clinical research on the therapy and management of cancer patients, including pharmacologic investigations of the mechanisms of action of anticancer drugs. This program is a collaborative endeavor between the Baltimore Public Health Service Hospital and the National Cancer Institute. A net increase of \$100,000 and 4 positions is requested for the expanded clinical program and a net increase of \$231,000 and 6 positions is requested for the new pharmacology program.

Additional research must be performed in the improvement of drug toxicity screens. Each addition to the screen will be expensive and should be made based on solid evidence that the addition supplies important information not derivable from the present two-tumor screen. Another problem of putting drugs into man safely concerns their formulation into the final preparation to be given to man. Many of the new agents are of large molecular size and poorly soluble. Research on new and safer solvents for these new materials is planned for 1968.

The use of platelets has been essential to intensive cancer therapy. At present, platelets must be used within a few hours of collection. As a result few institutions have them available. Research on freezing and prolonged storage of platelets will be fostered to remove this limitation.

In the area of breast cancer, extensive efforts will be made to identify high risk groups of women, with the aim of increasing the proportion of cases diagnosed in the potentially curable early phase of the disease. A study is to be made of the natural factors favoring control or dissemination of breast cancer, particularly hormonal factors now suspected of having special importance. There is an anticipated unobligated balance of \$313,000 for this program in 1967 due to the fact that the program was not funded until late in the fiscal year. This amount is restored in 1968.

Special reports have been furnished to the Committee on the breast and solid tumor task forces. Because of the alarming increase in lung cancer the National Advisory Cancer Council recommended the creation of a lung cancer task force. This task force, like many of the others, will utilize the resources provided in collaborative programs or through grants to carry out its objectives. A chairman of this task force has been selected and the task force is expected to become more fully operational in fiscal year 1968.

SUPPORTING SERVICES

Several service type functions which benefit the whole institute are included under the Collaborative Research and Development activity, including funding for the NCI Journal, Administrative Services, and other service functions.

In 1968, a program increase of \$400,000 and 5 additional positions is requested to fund the cost of moving into the new Cancer Building and the central services required therewith.

Also requested for the total Collaborative Research and Development program is \$11,000 for mandatory items such as annualization of positions new in 1967 and annualization of wage-board pay increase in 1967, offset by one less day of pay in 1968 and non-recurring items. There are also increases of \$106,000 for centrally furnished services from the "National Institutes of Health Management Fund."

Biometry, epidemiology, and field studies

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	115	\$1,034,000	117	\$1,063,000	+2	+\$29,000
Other expenses.....		336,000		347,000		+11,000
Total.....	115	1,370,000	117	1,410,000	+2	+40,000

Introduction

Characterization of the occurrence and behavior of cancers by specific sites in human populations, both in the United States and abroad, and the effects of migration on these cancer patterns continues to be the major concern of organizational groups funded under this budget activity.

A description of how the National Cancer Institute's Demography programs relate to other activities with which they are associated organizationally, may be found in the Introduction to the Etiology Area under, "Collaborative Research and Development."

Program plans in 1967

During this year, the Epidemiology Branch plans to further augment the studies on concordances between congenital defects and cancers. The Branch is

also establishing a registry of birth and death certificates for all children who die of cancer in the U.S. before 15 years of age, from 1960 on. This registry will make possible studies of the aggregation of cancer by type among sibs, twins, or geographically (by dates of birth or death). In addition, it will be possible to: (1) relate items on the birth certificate, such as maternal age or economic status, to the cause of death; and, (2) follow up groups suspected to be at unusual risk of neoplasia.

The Biometry Branch will continue its current program, with special emphasis upon the studies of cancer patterns in migrant populations. This Branch provides the biometric competence for the reporting of results emanating from experimental cancer therapy, and therefore provides an essential ingredient in identifying those therapeutic measures which may have potential value in the treatment or control of cancer in man. Its major effort to evaluate x-ray mammography as a diagnostic tool for use in early detection of breast cancer is showing laudable promise; success will determine whether or not vast sums of money should be spent on this technique as a public health measure in cancer diagnosis.

Activities of the newly established Epidemiologic Pathology Unit in 1967 include: (1) the study of multiple primary cancers of various anatomical sites as a special etiologic situation; (2) an analysis of pathology data in existing tumor registries to determine their adequacy for the types of studies envisioned; and, (3) the establishment of additional resources required to furnish needed data.

Concern with a possible relationship between cancer and selected occupations combined with the growth in number, efficiency, and reliability of hospital cancer registries, state tumor registries, and the willingness and cooperation on the part of industries made it feasible to attempt to determine the actual contribution of occupational cancer to the total cancer spectrum in the United States. Consequently, an Occupational Carcinogenesis Unit has been established this year to concern itself with the specific compilation and study of data associated with the incidence of neoplastic disease among selected occupations believed to be high risk.

Program plans in 1968

In addition to the continuation of the above, a program increase of 2 positions and \$29,000 is requested to support the first phase of the "Ten Cities Cancer Survey Program" to be conducted in relation to the 1970 decennial census.

The essential nature of the ten-cities survey to the entire biometric effort to characterize cancer incidence and behavior in the United States makes this a strategic item. Without the information to be derived from this survey the majority of other studies of cancer in human populations in the United States, during the ensuing 10-year period, will be of unknown reliability.

The planning for this activity will be performed by the Biometry Branch, but the implementation itself in 1970 will, of course, require the participation of outside groups, particularly the Bureau of the Census. The purpose of this survey is to provide baseline information about the populations of the United States for use in the evaluation and interpretation of specially collected data for a wide variety of need in the Biometry Branch programs. To the extent possible it will be planned to complement the Regional Medical Programs of the National Institutes of Health.

An increase of \$4,000 is requested for mandatory items such as annualization of positions new in 1967 and annualization of wage-board pay increases in 1967 fully offset by one less day of pay in 1968 and non-recurring items. There are also increases of \$11,000 for centrally furnished services from the "National Institutes of Health Management Fund."

Review and approval of grants

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	115	\$1, 114, 000	115	\$1, 116, 000	0	+\$2, 000
Other expenses.....		1, 335, 000		1, 472, 000		+137, 000
Total.....	115	2, 449, 000	115	2, 588, 000	0	+139, 000

Under the Associate Director for Extramural Activities, this activity supports the administrative staff for all contract activities and both the scientific and administrative staff responsible for the review of all cancer grants. The staff obtains the necessary information about all grant applications and, in cooperation with study groups, makes recommendations for the consideration of the National Advisory Cancer Council, which recommends approval or disapproval of applications. The program increase of \$44,000 will be used entirely for the continuation of existing activities and will cover the cost of site visits, travel of new grants review committees, etc., necessitated by the increase in the number of grantees and to provide better review of grants.

Included in the \$139,000 net increase is a \$2,000 decrease resulting from one less day of pay in 1968 offset by annualization of positions new in 1967. There are also increases of \$97,000 for centrally furnished services from the "National Institutes of Health Management Fund."

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits-----	57	\$605, 000	59	\$626, 000	+2	+\$21, 000
Other expenses-----		652, 000		689, 000		+37, 000
Total-----	57	1, 257, 000	59	1, 315, 000	+2	+58, 000

This activity provides for the overall administration and direction of the programs of the Institute. The Director and his staff give professional leadership and technical guidance to the varied activities of the Institute.

The program increase of \$32,000 and 2 positions will provide additional planning, programming, budgeting and the cost-effectiveness programs. Analyses will be undertaken concerning operations research and systems communications within selected areas, such as automated laboratory operations in cancer research, and increased computer technological utilization in research areas.

An increase of \$9,000 is requested for mandatory items such as annualization of wage-board pay increase in 1967, offset by one less day of pay in 1968 and non-recurring items. There are also increases of \$17,000 for centrally furnished services from the "National Institutes of Health Management Fund."

1812 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

New positions requested, fiscal year 1968

	Grade	Annua salary
Laboratory and clinical research:		
Medical officer (1).....	GS-17	\$22, 760
Medical officer (2).....	GS-16	40, 150
Scientist (2).....	GS-16	40, 150
Research assistant (3).....	GS-7	19, 353
Animal caretaker (5).....	WB-3	20, 150
Total (13).....		142, 563
Collaborative research and development:		
Medical officer (3).....	GS-16	60, 225
Branch chief (1).....	GS-15	17, 550
Medical officer (2).....	GS-15	35, 100
Do.....	GS-14	30, 212
Research assistant (2).....	GS-6	11, 734
Clerical assistant (6).....	GS-5	31, 986
Clerical assistant (2).....	GS-4	9, 552
Do.....	GS-3	8, 538
Clerical assistant (3).....	GS-2	11, 775
Total (23).....		216, 672
Biometry, epidemiology, and field studies:		
Statistician (1).....	GS-11	9, 221
Do.....	GS-9	7, 696
Total (2).....		16, 917
Program direction:		
Public health program specialist (1).....	GS-16	20, 075
Do.....	GS-15	17, 550
Total (2).....		37, 625
Total new positions, all activities (40).....		413, 777

ESTABLISHMENT OF INSTITUTE

Senator HILL. The committee will kindly come to order.

Dr. Endicott, we are glad to have you here with us again. You may proceed in your own way, sir.

Dr. ENDICOTT. Mr. Chairman, and members of the committee, the National Cancer Institute is completing its 30th year in 1967.

Senator HILL. It was the first Institute, was it not?

Dr. ENDICOTT. Yes, sir.

Senator HILL. Who introduced that bill in the House and Senate? Do you recall?

Dr. ENDICOTT. It was Magnuson, who was then in the House, and Senator Bone introduced it in the Senate.

Senator HILL. Homer Bone?

Dr. ENDICOTT. Yes.

Senator HILL. He came from the State of Washington. Bone was the Senator from Washington and Magnuson was in the House from Washington.

Dr. ENDICOTT. Mr. Maverick was also very influential.

Senator HILL. From Texas.

Dr. ENDICOTT. Yes.

Senator HILL. He was Congressman from San Antonio. He went down there to be mayor.

Dr. ENDICOTT. There was an interesting story. In the Senate it was introduced and signed by all Members of the Senate. The Vice President made the comment that this was the first bill he was aware of that was passed before it was introduced.

Senator HILL. It had all the Members on it.

Dr. ENDICOTT. Yes.

Senator HILL. That is interesting, very interesting. John N. Garner was Vice President at the time.

Dr. ENDICOTT. Yes.

Senator HILL. He is still living now.

Dr. ENDICOTT. He is in the nineties.

Senator HILL. Go ahead, Doctor.

THIRTY YEARS OF CANCER RESEARCH

Dr. ENDICOTT. Major changes in cancer research have occurred during that time—changes that reflect the increased knowledge medical science has gained through intensive laboratory and clinical studies.

The need confronting researchers 30 years ago was to learn enough about the basic nature of cancer to attempt some practical solution to the problem. The emphasis had to be on basic studies of cell growth, biology, and biochemistry, and experimental induction of cancer in animals. As knowledge of cancer grew, opportunities to undertake programed research aimed directly at control of cancer in man opened up, so that now research proceeds along both of these main approaches.

This change has not been sudden, but gradual. It has been a gradually evolving strategy of identify problems in cancer causation and treatment and developing planned programs to solve these problems. Most of these efforts are related to many types of cancer. This is true, for example, of our programs for finding chemicals which cause cancer or the viruses which may produce solid tumors. Others focus to a considerable degree on one type of cancer. I would like to take this opportunity to review with you the progress of some of our more programed work now underway:

UTERUS CANCER

Our 1964 study showed continued improvement in survival for women with treated cancer of the uterus, mainly attributed to early detection of cancer of the neck of the womb by increased use of the "Pap" smear. This was shown to be a reliable case-finding test in large populations in a series of studies by the Institute in different parts of the country in cooperation with local health authorities and physicians, and particularly in Shelby County, Tenn.

Senator HILL. That is where Memphis is.

Dr. ENDICOTT. Yes.

Senator HILL. This is where Pap lived.

Dr. ENDICOTT. This is the first large community in which the Pap smear was demonstrated to be really practical.

Senator HILL. That was Pap's home, was it not?

Dr. ENDICOTT. No, sir. He was located in New York City.

Senator HILL. Was he not in Memphis for a while?

Dr. ENDICOTT. I don't think so. I think he was always at Cornell.

Senator HILL. I thought he was in Memphis for a short time. But that is not important. The important thing is that he got that smear.

Go ahead, Doctor.

DEATH RATE REDUCTIONS

Dr. ENDICOTT. In 25 years, deaths from uterine cancer have been cut almost 50 percent in white women, and 40 percent in Negro women, in whom it occurs twice as frequently as in whites.

Senator HILL. What reason is there that it occurs twice as frequently in Negroes as in whites?

Dr. ENDICOTT. It is not precisely known, of course, but it is probably related to the fact that they bear children earlier, generally have more children and have poorer general hygiene.

This is generally true, that the incidence is higher in lower income groups than in higher income groups.

We now have the knowledge to stop deaths from this form of cancer in the vast majority of cases. The barrier is no longer knowledge of how to do so, but getting women to take the test and providing technical and medical manpower to make the tests and follow through.

LUNG CANCER AND CIGARETTE SMOKING

Lung cancer is still the leading cause of cancer deaths in this country, particularly for men.

Senator HILL. Is that because men smoke more cigarettes than women?

Dr. ENDICOTT. That certainly is the major reason.

Senator HILL. What can you do to give the man the willpower to stop?

Dr. ENDICOTT. Well, sir, I don't know. I am having a little trouble with it, myself.

Senator HILL. The best thing to do is, do what I did; that is, never start.

Dr. ENDICOTT. As a matter of fact, this is the very heart of the Public Health Service's campaign, to try to keep the young people from ever starting.

There has been little improvement in the results of treatment, partly because only about 20 percent of lung cancers are discovered in a localized stage.

Senator HILL. In other words, too far advanced when you find them.

Dr. ENDICOTT. Yes. The overall percentage of survival is only about 5 percent.

Senator HILL. Yet men keep on smoking.

Dr. ENDICOTT. Yes, sir.

Evidence from research led the Surgeon General's Advisory Committee on Smoking and Health to conclude in 1964 that cigarette smoking is causally related to lung cancer in men to a degree far outweighing all other factors, and that the data for women, though less extensive, point in the same direction.

Incidentally, the increase in lung cancer is tapering off for men, but is still continuing to rise quite rapidly for women, and probably is a reflection of the later date at which smoking became common amongst the ladies.

Senator HILL. To what do you ascribe this tapering off in men?

Dr. ENDICOTT. Probably the percentage of men who smoke and have smoked for quite a long while is not changing substantially, so that

one would assume that we are seeing just about the full impact from smoking. Whereas, in ladies the length of time that they have smoked and the number who smoke are still catching up with the men.

Dr. SHANNON. Senator Hill, there is very good data on that which Dr. Endicott might wish to place in the record.

Senator HILL. Will you give us that for the record, Dr. Endicott?

Dr. ENDICOTT. Yes.

Senator HILL. Fine.

(The information follows:)

SMOKING AMONG MEN AND WOMEN

The age adjusted death rate from cancer of the lung and bronchus for white females in 1964 is the same as that for white males in 1935, namely 6.4 per 100,000, so that the death rate for females is lagging behind that for males by about 30 years. In the years between 1935 and 1964 the rate of increase for males reached spectacular proportions. In the decade between 1935 and 1945 the incidence increased over 120 percent, in the next decade 100 percent and in the last decade about 45 percent.

During the same three decades the rate for white females has only doubled, but in the past decade it has increased nearly 50 percent.

In absolute terms, the number of deaths for females is still relatively small, and the rate of increase for females is still less spectacular than for males 30 years ago. It is too early to predict whether in the next three decades the rates for women will rise as rapidly as did the rates for men in the past three decades, but one thing is quite clear, the rates of increase for men are tapering off but they are still steadily increasing.

EFFORT TO IDENTIFY AND ELIMINATE CULPABLE SMOKING ELEMENT

Dr. ENDICOTT. Later studies, since the Surgeon General's Advisory Committee's report, gives further support to this conclusion. Scientists and physicians believe that if smoking were substantially reduced or discontinued, the result would be a marked reduction in pulmonary cancer, hence in deaths from this disease. Since smoking is such a deeply ingrained habit, effort is warranted to identify and eliminate whatever it is in tobacco or the smoking process that induces cancer. The National Cancer Institute and the Department of Agriculture are jointly trying to do this.

Senator HILL. Have they made any progress along these lines?

Dr. ENDICOTT. Yes, sir. There is quite steady progress in identifying the chemical substances in the cigarette smoke which are direct carcinogens and those which enhance, those substances which enhance this effect. There is quite a large number now of carcinogenic materials that have been identified in the tar derived from the cigarette.

EDUCATIONAL CAMPAIGNS

Meanwhile, efforts are being made through educational campaigns to discourage smoking and to detect lung cancer earlier through periodic chest X-ray examination. We are on the search for more effective treatment for those stricken by the disease.

LUNG CANCER TASK FORCE

The National Advisory Cancer Council has urged the creation of a lung cancer task force to find more effective treatment and means of preventing the disease.

And subsequently, in his message on education in health, the President requested the Secretary to establish a lung cancer task force, and we have established one which I am chairing, myself.

CIGARETTE ADVERTISING CAMPAIGN

Senator HILL. You speak about the educational campaign. I don't look at TV too much, but I don't think you can turn on a program but what you get a cigarette advertisement.

Dr. ENDICOTT. Of course, as you know, this is one of the major advertising campaigns. An enormous amount of money is spent by the tobacco industry in advertising not only on TV and in radio, but also in newspapers and magazines, billboards, everywhere.

Senator HILL. I was interested the other night. I saw a pretty good presentation on the TV. They didn't have just one brand of cigarettes to advertise. It seemed to me they had four or five or six different brands on that one program. It shows the extent to which they are advertising them.

Dr. ENDICOTT. Yes. One of the major problems, of course, in any educational campaign directed against smoking, is the problem of getting anything like equal time or equal billing in the mass media of communication. I have had the experience of appearing on a TV program in which the moderator insisted that we stay away from the subject of tobacco, because his sponsors, some of them, were going to be tobacco companies; and if we were going to discuss this, the whole program was going to be killed. This was one that was taped.

Senator HILL. They were paying for the program?

Dr. ENDICOTT. Yes. So we talked about burning vegetation and never mentioned tobacco.

Senator HILL. Did you stop to define what burning vegetation is, so that the average fellow looking at TV would know what you were talking about?

Dr. ENDICOTT. I did the best I could, but the opportunity did not present itself.

ACUTE LEUKEMIA IN CHILDREN

One of the most rewarding research approaches to specific types of cancer has been the study of leukemia, particularly acute leukemia in children. Drug treatment of this invariably fatal disease was begun 20 years ago by Dr. Sidney Farber at the Children's Cancer Research Foundation in Boston. The cancer chemotherapy program instituted in 1955 with its screening, pharmacology, and clinical-trials activities, soon began to produce new drugs. The program brought together, in a cooperative effort to improve drug treatment, the resources of leading research institutions throughout the country, many of which were already supported out of the chemotherapy and grant programs. The National Cancer Institute's Acute Leukemia Task Force was established in 1962, and has been a most effective instrument for communication and the planning of action to be taken by investigators interested in the diverse aspects of this disease.

ANTICIPATED INCREASING DISEASE CONTROL

As a result of these efforts, an increasing number of patients are surviving many months or years—some of them 5 years or longer—

without evidence of disease. This gives greater hope than ever before that acute leukemia, and perhaps chronic leukemia, may one day be fully controlled. Part of this success can be attributed to new techniques for supplying leukemia patients the blood components needed to control hemorrhage and infection.

SPECIAL VIRUS-LEUKEMIA RESEARCH PROGRAM

Through other studies, we are attempting to find out whether a virus may be the causative agent in human leukemia and, if so, whether a vaccine can be developed against it. For the past 2 years the Congress has appropriated funds (over \$16 million in 1967) for a special program of virus-leukemia research. This program is progressing according to plan and now includes some 70 projects for studies on the cause, prevention, and treatment of human leukemia, the possible relationship of animal leukemias to man, and the hazards involved in virus-cancer research.

As an aside, I might report that——

Senator HILL. Did you see the article in yesterday's New York Times under "Medicine tracking the footprints of a cancer virus"?

Dr. ENDICOTT. No, sir; I didn't see that.

Senator HILL. I suggest that at your first opportunity you read it. It might be interesting to you.

Dr. SHANNON. That is by Mr. Schmeck?

Senator HILL. Yes.

Dr. SHANNON. That was a very good article.

Senator HILL. I thought so.

VIRUS PARTICLES PRESENT IN ANIMAL AND MAN LEUKEMIAS

Dr. ENDICOTT. I might comment that there is a very puzzling situation which exists in this leukemia-virus field. In the animal leukemias we have studied we regularly find a small virus particle called the "C-type particle," which is the virus which transmits and causes leukemia in experimental animals. In man, we find C-type particles, but much more frequently, we find particles which resemble the Herpes virus. It is not Herpes virus. It is not like any other known virus, but it occurs more frequently and is cultured much more easily from human patients with leukemia than the C-type particles. It is still a great puzzle, as to whether this is, in fact, the responsible agent or whether it simply occurs as what you might call a passenger virus or just happens to be there.

LABORATORY HYBRIDIZATION OF TWO VIRUSES

At any rate, it is much easier to cultivate in the laboratory than the C-type particles, and we are working very hard to understand what the meaning may be. During the past year, some very interesting developments have taken place in several laboratories in which there appears to be a hybridization within the test tube of two kinds of viruses; one which causes cancer, and another which doesn't but which is quite infective. The new hybrid is much more capable of invading and producing effects, and it carries the cancer message with it. Apparently the outer core of the virus comes from the more infectious

virus, and the inner genetic core from the cancer virus. Now this is occurring frequently in the laboratory. Whether this actually occurs in nature, whether this is part of the story and we have not found the right combination of viruses yet in order to be able to get them to grow well in the laboratory, it is too early to say.

There has been some very exciting work by Dr. Huebner in the Allergy and Infectious Diseases Institute in this area in which he has been hybridizing viruses which produce leukemias with viruses that produce solid tumors. In these studies he is able, by appropriate combinations to cross species barriers, to transmit sarcoma with leukemia virus, and vice versa. And when we finally get all the confusion sorted out, I think that this may be looked back upon as a real milestone in this area.

Senator HILL. I think when you read this article—and I realize you haven't had time yet, because it just came out yesterday, and it did not hit Washington too much before this morning—you will find a great deal of confirmation for what you just said, tracking the footprints of a cancer virus. It is most interesting, what you have said; and this article pretty much confirms what you have said.

DISAPPEARANCE OF SOLID TUMOR VIRUSES AFTER TUMOR DEVELOPMENT

Dr. ENDICOTT. Especially in the solid tumor viruses, by the time the tumor appears the viruses are no longer present. At least one cannot recover them. What has been discovered in the past year or so is that, even though one can no longer recover living virus, there is immunological evidence that the virus has been there and that a part of the virus is being reproduced in the host cells for long periods afterward.

IMPLICATION OF TOXIC FUNGI PRODUCTS IN AFRICAN LIVER CANCER AND JAPANESE STOMACH CANCER

There are toxic products of fungi that contaminate food and may be implicated in cancer of the liver in Africa and cancer of the stomach in Japan. Among them are products of the mold "*Aspergillus flavus*" called aflatoxins. Aflatoxins in feed were found to be the primary cause of an epidemic of liver cancer in hatchery-raised trout in this country a few years ago. Since then, four major aflatoxins have been shown to produce liver cancer in mammals, birds, and fish. We have consequently become greatly interested in the possibility that aflatoxins may have a role in causing cancer in man—a possibility supported by statistical data showing patterns of cancer incidence in other countries. We have therefore stimulated analytical, biological, and biochemical studies of aflatoxins and other mycotoxins to evaluate their toxicity and cancer-causing potentiality. This is one kind of environmental approach to cancer prevention and control to which a large share of our research effort is given.

REVOLUTION IN DRY FOOD PROCESSING AND STORAGE REQUISITE

Just as an aside, these aflatoxins are produced in foods that are stored at fairly warm temperatures and not completely dry, in situations in which molding occurs. It occurs in cereal grains, it occurs in peanuts, for example.

Senator HILL. You mean goobers?

Dr. ENDICOTT. Goobers.

Senator HILL. We raise quite a few of them down home in my State, you know.

Dr. ENDICOTT. It occurs in cottonseed meal, linseed meal, any number of such materials, when they are stored in warm, moist situations.

Senator HILL. You speak about trout. If you fry the trout, would that pretty well destroy this aflatoxin, or not?

Dr. ENDICOTT. There is nothing to indicate that even if you ate the trout raw it would be dangerous. The material, once it gets into the body, is quickly metabolized and changed into something else. It does its harm directly on the liver and is metabolized and excreted. So far as anyone can tell, you could go blithely on eating the cancerous livers of these trout without its hurting you.

Dr. SHANNON. All you would get is tapeworm.

Senator HILL. We used to have a lot of tapeworm down in my neck of the woods, but we don't have much now.

Dr. ENDICOTT. This discovery, which is a new era of biological investigation, is going to require a revolution in food processing and food storage before we are finished.

Senator HILL. That is interesting, most interesting. As you know, we get more and more canned foods and that kind of thing every day.

Dr. ENDICOTT. Canned food is not the hazardous material. I am speaking of the dried materials, such as cereals, things like that.

Senator HILL. The truth is, when I spoke about canned food I had in mind cereals. They don't come in a can, they come in a paper box.

OCCUPATIONAL GROUP RESEARCH

Dr. ENDICOTT. There are also important opportunities for research using occupational groups as prime populations in which to study such fundamental questions as why all persons exposed to a cancer hazard do not develop the disease, and what are the earliest states of tissue reaction that may progress to overt disease. Enzyme and other protein studies may identify metabolic abnormalities in organs affected by cancer-causing agents.

CANCER ASPECT RESEARCH APPROACHES

Attempts such as these to get at the problem of cancer in man take off from points of departure that occur from time to time with the steady advancement of research on all aspects of the cancer problem. The emphasis on fundamental research in the early years of the Institute's history gradually permitted the delineation of areas offering special promise for investigation. One of the first was drug treatment, and the chemotherapy program was launched in 1955. Another was carcinogenesis, and for the past several years we have been expanding laboratory and statistical and epidemiological work to learn how environmental factors cause cancer and how they may be controlled. As I have already mentioned, we have more recently organized the many-faceted special virus-leukemia research program.

TASK FORCE TECHNIQUE

We have found the task force technique to be very effective for reliable delineation of new areas for programed research. The acute

leukemia task force was so successful as a communication service that the techniques of this group have been freely applied to others. In 1964, we organized the chronic leukemia-myeloma task force with the object of controlling chronic leukemias and plasma cell myeloma with drugs. In 1965, we established the lymphoma task force to correlate research on drug and radiation treatment of Hodgkin's disease and other malignant lymphomas. A solid-tumor task force was organized in June 1966 to intensify studies on the treatment of these cancer forms.

Senator HILL. Let me ask you this question. It is said in no critical sense. We started this Institute in 1937. Why do you suppose it took so long to establish these task forces that you refer to?

Dr. ENDICOTT. I suppose the best answer is, that we had to accumulate enough knowledge to know how to organize the program before it was really justified to attempt to organize a task force. There has been, I think, perhaps an overenthusiasm developed to the task-force approach to the extent that I find myself under continuing pressure to create new task forces before we can discern any real leads that would permit a task-force group to mount intelligent programs.

I think this device really is primarily useful when the problem is well along toward solution and you can foresee perhaps three or four alternative routes to the goal of control of the disease. Until you reach this stage, about all that the task force can do is be a debating society, really. I think perhaps that is the best answer.

BREAST CANCER

One of the most challenging problems is breast cancer in women, on which little progress has been made for the past 30 years. The Congress was therefore fully justified in approving an appropriation increase for a breast-cancer task force which was established in April 1966. This group has formed subcommittees to work on the problems of identification of the high-risk—short-survival—patient, and to set up a national study of extensive versus limited surgery for localized disease. The task force is also reviewing the animal screening data of the Cancer Chemotherapy National Service Center to make recommendations about the best animal tumors for the prediction of hormone and other drug treatment of breast cancer. It is also studying the ongoing work in the viral causation of breast cancer.

ENGLISH RESEARCH SUGGESTIVE OF SUBSTANTIALLY ALTERED STEROID HORMONE PATTERN

I might add here that perhaps the most challenging lead at the moment derives from some work recently done in England which suggests very strongly that the woman who is at the greatest risk to get cancer of the breast in the first place, and in whom the disease is most likely to proceed rapidly to a fatal conclusion, has a substantially altered steroid hormone pattern which it may be possible to identify in the laboratory. So that is a possibility, that we may be able to select out of a population a group of women who should be watched very closely to detect breast cancer, and also out of any population of women who already have the disease we can select a population which is going to do badly with conservative therapy, so that we can direct the really

aggressive therapy toward this group and treat the others conservatively.

Senator HILL. Now you are thinking about not only treatment of breast cancer, but what we speak of as metastasis as well?

Dr. ENDICOTT. Yes.

EARLIER RESEARCH AT MEMORIAL SLOAN-KETTERING HOSPITAL

Dr. SHANNON. I might comment on that subject. One of the major thrusts at the Memorial Sloan-Kettering Hospital, back in the 1940's when Dr. Rhodes was director, was an attempt to do precisely that—to determine whether, indeed, a correlation could be shown to exist between the pattern of steroid excretion and the disease. As Dr. Endicott points out, it is now coming into being, some 20 years later, as our knowledge of how to handle steroids permits the use of simplified techniques to do this type of correlative study. The idea was found in the late 1940's but the instrument capability was not yet ready to take advantage of the idea.

CHORIOCARCINOMA TASK FORCE

Dr. ENDICOTT. We are presently developing a choriocarcinoma task force as a transitional step toward a new way of using these groups to translate research results directly into nationwide projects for the control of specific malignant diseases. Choriocarcinoma occurs in connection with pregnancy. It is one of the less common cancers of the reproductive system, but, nevertheless, offers an unusual opportunity for control through prevention and drug treatment. This opportunity will be taken full advantage of in this country and, hopefully, in such areas as India and Southeast Asia, where the disease is more common than here.

DRUG CURE OF DISEASE

I might add that this little task force, which is now in operation, represents the first type of cancer in which a capability to achieve a full control of the disease has all developed within the past 10 years and has come directly out of the chemotherapy efforts of the National Cancer Institute. The disease can be cured—and I use this word advisedly—with drugs. The techniques were first developed at the National Cancer Institute by Dr. Roy Hertz. Drugs may be used in the early stages of the disease. The woman in the childbearing period can be cured without having her uterus removed and can go ahead and have normal subsequent pregnancies.

We are now setting up about 10 centers around the country where the hormone assays and the drug treatment can be provided. We believe that within a very short time in this country this disease can be eliminated as a cause of death.

Senator HILL. Do you know of any particular reason why the disease should be more common in India and Southeast Asia than here?

Dr. ENDICOTT. No, sir; I do not. We really just don't know. But it is manifold more common in the Philippines, in Indochina and in India than it is here. We really don't know why this should be so. There, it is perhaps one of the most common cancers. Here, it is exceedingly rare.

INCREASES IN CANCER INCIDENCE, DEATH AND CURES

Although we are directing programed research in areas of special promise and need for target type investigation, we are not unmindful of the serious threat posed by the cancer problem as a whole. The situation is one of paradox. During the 30 years that the Federal Government has fostered cancer research through National Cancer Institute programs, the death rate from cancer has gone up from 112.5 to 153 per 100,000 population. On the other hand, we are curing more cancer today than 30 years ago. Around 1937, the ratio of patients who survived 5 years increased from fewer than 1 in 5 to 1 in 4. That was just about the time the Institute was established. Now, the ratio is 1 in 3, and under optimum use of present-day methods of early diagnosis and treatment it could be further improved to 1 in 2.

Senator HILL. Early diagnosis and treatment is so important; isn't it?

Dr. ENDICOTT. Yes, sir. However, we are losing ground so long as the cancer rate continues to go up—and it is still going up. While lung cancer accounts for much of the increase, other forms of cancer are also occurring with greater frequency while a few, such as stomach cancer, are decreasing.

Senator HILL. To what do you ascribe the decrease in stomach cancer?

Dr. ENDICOTT. This is just a guess, I suppose, but I suspect that stomach cancer probably is caused by something in the diet and that the change in this country, the downward trend, probably represents something that is changing in our diet over the decades.

Senator HILL. Just what that is, we do not know?

Dr. ENDICOTT. No, sir.

ULTIMATE CANCER SOLUTION LOCKED IN CELL

There is still a great deal to be learned about the nature of cancer and how to deal with it as a disease in man. Thirty years ago staff scientists and grantees of the National Cancer Institute concentrated their research on the cell, trying to find out how a normal cell becomes cancerous and produces more cancer cells. We still haven't found out. Although research has since ranged over much wider fields, the ultimate solution to the cancer problem is probably still locked in the cell. We believe, however, that efforts to control cancer in man need not—in fact, cannot—wait for that final solution to come. Time and time again, we have seen how knowledge gained from diversified research can be fitted together and used as a point of departure into important new areas that invite exploitation by the problem-solving approach.

BASIC SOUNDNESS OF CANCER RESEARCH

In its first public report entitled "Progress Against Cancer," issued last December, the National Advisory Cancer Council stated that the only avenue to the solution of the cancer problem; namely, research, is basically more sound today than ever before. It said that the opportunity to get on with the final solutions to the complex problem of cancer has never been more promising. I am in complete agreement with the Council's comments, for I share their confidence in the ability of

medical science to bring cancer under control as it has brought many other diseases under control. Cancer is a stubborn problem, but cancer researchers are stubborn people in dealing with it. Something has to give way, and cancer is giving way already, however slowly.

BUDGET REQUEST

Mr. Chairman, the request for the National Cancer Institute for 1968 is \$183,356,000 compared to the 1967 operating level of \$172,455,000.

BUDGET BUREAU REDUCTION

Senator HILL. The request of the Budget Bureau was for \$198,580,000 and then the Bureau of the Budget finally allowed you \$183,356,000 which is \$15,224,000 less than your request. Is that right?

Dr. ENDICOTT. Yes, sir.

Senator HILL. What will be the effect of that reduction?

Dr. ENDICOTT. Well, sir, it will obviously make us postpone some projects which we would otherwise have started this year, and it will be impossible for us to expand some of them which are already ongoing.

CLINICAL TRAINING GRANTS AND CHEMOTHERAPY PROGRAM

Senator HILL. How important would you say these projects are?

Dr. ENDICOTT. Well, sir, some of them are quite important, or I wouldn't have requested funds for them. The areas in which I am most concerned are the new clinical training grant program, which I think is very important for the long-term success of regional medical programs for heart, cancer, and stroke; a chemotherapy program which is running into difficulties because of the rapidly increasing costs of clinical trials. As you know, the bed cost has gone up on a national level about 20 percent in the past year, and this program has had about a 20-percent reduction over the past 2 years. There is no reduction in this year's budget.

Senator HILL. But with the increased cost per bed, there would be a reduction?

Dr. ENDICOTT. Yes, sir. We are caught in a price squeeze here. These two programs are of particular concern to me, because of their importance for the future. The other area where I was disappointed, but of course in times such as these one has to expect this sort of thing, is in the area of cancer centers.

GEOGRAPHIC DISTRIBUTION OF CANCER CENTERS

As I am sure you know, we have been very actively attempting to develop new cancer centers in the Middle West and in the Far West and in the South, to make up for the very bad geographical distribution of cancer centers, most of which are on the Atlantic seaboard, from here north. And there are but two major centers in the entire Mississippi Basin; one in Madison, Wis., and the other in Houston, Tex. The rest of the country has cancer activities of quite limited nature, with just an occasional project and occasional man in the institution, but not really a strong cancer program.

We have been working hard to identify institutions with potential and, I think, are beginning to be successful.

Senator HILL. How much did the Budget Bureau cut you in your request for the new cancer centers?

Dr. ENDICOTT. The Cancer Institute's original request was for \$20 million, and we were finally allowed \$12½ million.

Senator HILL. That is quite a cut. How many centers would this involve?

Dr. ENDICOTT. It is hard to give an exact number, because their startup costs vary a good bit. Now we know that the costs to run a fully established one are very expensive. The budget of the Sloan-Kettering Memorial Hospital is on the order of \$20 million a year. At the M. D. Anderson Hospital in Houston, it is about on the order of \$15 million. But when they start up, I mean you can make quite a significant beginning in an institution with just a few hundred thousand dollars.

Senator HILL. The Budget Bureau allowed you the same amount for the coming fiscal year as they did for the present fiscal year?

Dr. ENDICOTT. That is right.

Senator HILL. No increase at all?

Dr. ENDICOTT. That is correct.

CLINICAL TRAINING GRANTS

Senator HILL. Now you speak of your new clinical training grant program. How much were you reduced in your request for these?

Dr. SHANNON. The overall reduction in the training programs is \$2,428,000. But I don't know what proportion—

Dr. ENDICOTT. The Cancer Institute's original request was \$8.4 million. The allowance was \$5.4 million. It is a \$3 million reduction.

Senator HILL. How much did you have for the program this year?

Dr. ENDICOTT. The same.

Senator HILL. They did not allow you any increase at all?

Dr. ENDICOTT. That is right.

CHEMOTHERAPY PROGRAM

Senator HILL. Now your chemotherapy program, how much did they cut you on that?

Dr. ENDICOTT. There was a directed cut, sir, last year and the year before. The budget now before you is for the same amount as we had this year.

Senator HILL. You had no increase, then, on any of these programs, these three we have been talking about, in the budget for this year. Is that right?

Dr. ENDICOTT. That is correct.

BUDGET REQUEST INCREASES

The 1968 budget request contains increases of \$10,901,000, including \$5,767,000 for research grants; \$156,000 for research fellowships; \$282,000 for training grants; \$1,289,000 for direct research in our general laboratories and clinics; \$3,170,000 for collaborative research and development; \$40,000 for biometry, epidemiology, and field studies; \$139,000 for review and approval of grants; and \$58,000 for program direction.

CLINICAL TRAINING PROGRAM

Senator HILL. I judge from what you have said—if I am wrong, you correct me—that you felt your new clinical training program was as important or urgent as any of your other programs. Is that right?

REGIONAL SPREAD OF CENTER EXCELLENCE

Dr. ENDICOTT. Yes, sir. I would like to explain why I feel that way.

Senator HILL. All right.

Dr. ENDICOTT. The new regional medical program for heart disease, cancer, and stroke is based on the concept that the general level of health care in a geographical region can be substantially upgraded if the excellence which exists at the medical center can be spread by various devices throughout the region. But at the very heart of this is that first there must be excellence at the center. As I have indicated, many of the medical centers do not really have cancer programs at this point in time. Many medical centers, for example, do not have a radiation therapy department for training therapists. Many medical schools do not have a single person on the faculty who is really expert in the drug treatment of cancer, and so on.

Now the clinical training grant program is directed head on to try to solve this problem.

Senator HILL. Getting this personnel?

Dr. ENDICOTT. By getting trained personnel by which to staff, in the beginning, the center; and, as time goes on, other institutions within the region. I regard this as a very critically urgent program. The longer we postpone the training of personnel, the longer we will postpone the real implementation of the regional medical program.

NONFUNDING OF ACTIVITY

Senator HILL. How much did you request for this particular program?

Dr. ENDICOTT. We originally requested \$8 million.

Senator HILL. And you got \$5 million?

Dr. ENDICOTT. \$5 million.

Dr. SHANNON. Might I add, Senator Hill, that the funds available to the regional medical program under their authorization, do not permit the activities that Dr. Endicott has been discussing. The funds are divided into two general areas: one, for direct operation which relates to the establishment and designing of the program. The major funds are available only for grants to regional areas for planning initially and operation later. They do not encompass the type of activities that Dr. Endicott has been discussing.

I think it is important to point out, sir, that there is no conflict between the two programs.

Senator HILL. Is there anything else you would like to add, Dr. Endicott?

Dr. ENDICOTT. No, sir.

RETURN OF DR. HELLER, FORMER DIRECTOR

Senator HILL. How long have you been head of the Cancer Institute?

Dr. ENDICOTT. It will be 7 years in July.

Senator HILL. Your predecessor was Dr. Heller?

Dr. ENDICOTT. Yes, sir.

Senator HILL. He left to go to Sloan-Kettering?

Dr. ENDICOTT. Yes, sir. Now he is back.

Senator HILL. He had a cardiac condition, did he not?

Dr. ENDICOTT. He had a stroke. But he is serving as a consultant. He works about 1 or 2 days a week as my specialist on international programs. It is delightful to have him back.

Senator HILL. He is still living in New York?

Dr. ENDICOTT. No, sir; he has moved back to Bethesda.

Senator HILL. He went to medical school in Atlanta. His roommate was a first cousin of mine. He is a very good man, I am glad to hear you say that he has recovered to an extent where he can continue some of his work.

Dr. ENDICOTT. Yes. He travels widely.

Senator HILL. He is not an old man.

Dr. ENDICOTT. No, sir; he isn't.

Senator HILL. Next time you see him, you tell him I asked about him, and convey my warmest regards to him.

Dr. ENDICOTT. Yes, sir.

Senator HILL. I have a high regard for him. I hated to see him leave the Institute.

Now he is back as a consultant?

Dr. ENDICOTT. Yes.

Senator HILL. He comes about once a week?

Dr. ENDICOTT. He comes in the office about twice a week.

Senator HILL. I suppose this is his main interest right now.

Dr. ENDICOTT. Yes, sir. He is also serving as a consultant to the District of Columbia in helping them develop their regional medical program for heart, cancer, and stroke. He is their principal consultant in the cancer field. He is very busy.

Senator HILL. He is working harder than before. I am delighted that he has recovered to that extent. He had a stroke when?

Dr. ENDICOTT. It has been 5 years ago since he had that stroke. He is still disabled, but he is able to drive and get around.

Senator HILL. His advice is worth a good deal to you.

Dr. ENDICOTT. Yes, sir; it certainly is.

Senator HILL. I am delighted to hear that. How long has he been with you?

Dr. ENDICOTT. He came back last summer, as I recall.

Senator HILL. I was afraid that he was out, and he was out for several years, was he not?

Dr. ENDICOTT. He had a part-time position at the American Cancer Society in New York City after he retired from Sloan-Kettering. He was there, I would say, perhaps 2 or 3 years.

Senator HILL. He really didn't have an opportunity to get into the biological field like he does now; is that right?

Dr. ENDICOTT. I think perhaps his work there was less interesting to him than what he is doing now.

Senator HILL. Is there anything you would like to add, Doctor?

Dr. ENDICOTT. No, sir.

Senator HILL. Is there anything you would like to add, Dr. Shannon?

Dr. SHANNON. No, sir.

Senator HILL. How about you, Dr. Gehrig?

Dr. GEHRIG. No, sir.

Senator HILL. Thank you very much. We appreciate your testimony very much.

Dr. ENDICOTT. Thank you, Mr. Chairman.

NATIONAL INSTITUTE OF DENTAL RESEARCH

STATEMENT OF DR. SEYMOUR J. KRESHOVER, DIRECTOR; ACCOMPANIED BY HERBERT C. CHRISTOFERSON, EXECUTIVE OFFICER; AND MRS. FRANCES H. PETTINATO, BUDGET OFFICER, NATIONAL INSTITUTE OF DENTAL RESEARCH; DR. JAMES A. SHANNON, DIRECTOR; RICHARD L. SEGCEL, EXECUTIVE OFFICER; AND LELAND B. MAY, ACTING FINANCIAL MANAGEMENT OFFICER, NATIONAL INSTITUTES OF HEALTH; DR. LEO J. GEHRIG, DEPUTY SURGEON GENERAL; CHARLES MILLER, CHIEF FINANCE OFFICER; JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

NATIONAL INSTITUTE OF DENTAL RESEARCH

For expenses, not otherwise provided for, necessary to enable the Surgeon General to carry out the purposes of the Act with respect to dental diseases and conditions, **[\$28,308,000] \$30,307,000.**

Amounts available for obligation

	1967	1968
Appropriation	\$28,308,000	\$30,307,000
Transfer to "Operating expenses, Public Buildings Service," General Services Administration	-12,000	0
Comparative transfer to "Salaries and expenses, Office of the Secretary"	-91,000	0
Comparative transfers within NIH	+242,000	0
Total	28,447,000	30,307,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Posi-tions	Amount	Posi-tions	Amount	Posi-tions	Amount
Grants:						
Research		\$15,126,000		\$15,909,000		+\$783,000
General research support grants		(1,079,000)		(1,294,000)		(+215,000)
Scientific evaluation grants		(42,000)		(42,000)		(0)
Categorical clinical research centers		(400,000)		(400,000)		(0)
Dental research institutes		(3,000,000)		(3,000,000)		(0)
Fellowships		1,691,000		1,971,000		+280,000
Trainings		5,398,000		5,469,000		+71,000
Direct operations:						
Laboratory and clinical research	232	4,040,000	238	4,598,000	+6	+558,000
Collaborative research and development	3	711,000	4	860,000	+1	+149,000
Biometry, epidemiology, and field studies	23	427,000	23	435,000	0	+8,000
Review and approval of grants	40	619,000	40	662,000	0	+43,000
Program direction	26	392,000	26	403,000	0	+11,000
Total obligations	324	28,404,000	331	30,307,000	+7	+1,903,000
Unobligated balance reserve	0	43,000	0	0	0	-43,000
Total obligations and balance	324	28,447,000	331	30,307,000	+7	+1,860,000

1830 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	324	331	+7
Full-time equivalent of other positions.....	5	5	0
Average number of all employees.....	305	320	+15
Personnel compensation:			
Permanent positions.....	\$2,769,000	\$2,869,000	+\$160,000
Positions other than permanent.....	29,000	29,000	0
Other personnel compensation.....	30,000	31,000	+1,000
Total personnel compensation.....	2,768,000	2,929,000	+161,000
Personnel benefits.....	318,000	339,000	+21,000
Travel and transportation of persons.....	120,000	145,000	+25,000
Transportation of things.....	19,000	24,000	+5,000
Rent, communications, and utilities.....	85,000	107,000	+22,000
Printing and reproduction.....	12,000	12,000	0
Other services.....	257,000	324,000	+67,000
Project contracts.....	525,000	629,000	+104,000
Services of other agencies.....	177,000	200,000	+23,000
Payment to "National Institutes of Health manage- ment fund".....	1,404,000	1,592,000	+188,000
Supplies and materials.....	310,000	406,000	+96,000
Equipment.....	199,000	256,000	+57,000
Grants, subsidies, and contributions.....	22,215,000	23,349,000	+1,134,000
Subtotal.....	28,469,000	30,312,000	+1,903,000
Deduct quarters and subsistence charges.....	5,000	5,000	0
Total obligations by object.....	28,404,000	30,307,000	+1,903,000

Summary of changes

1967 enacted appropriation.....	\$28,308,000
Transferred to "Operating expenses, Public Buildings Services," General Services Administration.....	-12,000
Comparative transfer to "Salaries and expenses, Office of the Secretary".....	-91,000
Comparative transfers within NIH.....	+242,000
Unobligated balance, reserve.....	-43,000
1967 total estimated obligations.....	28,404,000
1968 estimated obligations.....	30,307,000
Total change.....	+1,903,000

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1831

	Base		Changes from base	
	Posi- tions	Amount	Posi- tions	Amount
INCREASES				
Built-in: Annualization of new positions authorized in 1967.....	10	\$218,000		\$18,000
B. Program:				
1. Research grants.....		15,126,000		783,000
2. Fellowships.....		1,691,000		280,000
3. Training grants.....		5,398,000		71,000
4. Laboratory and clinical research.....	232	2,982,000	6	388,000
5. Collaborative research and development.....	3	707,000	1	147,000
6. Biometry, epidemiology, and field studies.....	23	396,000		6,000
7. Review and approval of grants.....	40	437,000		23,000
8. Program direction.....	26	263,000		7,000
Total program increases.....			7	1,705,000
C. Payment to "National Institutes of Health management fund" for centrally furnished services:				
Laboratory and clinical research.....		1,058,000		159,000
Collaborative research and development.....		4,000		2,000
Biometry, epidemiology and field studies.....		31,000		2,000
Review and approval of grants.....		182,000		21,000
Program direction.....		129,000		4,000
Total management fund increases.....				188,000
Total increases.....			7	1,911,000
DECREASES				
1 less day of pay in 1968 (total decreases).....				-8,000
Total net change requested.....			+7	+1,903,000

Explanation of changes

Research grants.—The increase of \$783,000 includes \$215,000 for general research support grants, \$288,000 for noncompeting requirements of the regular program and \$280,000 for competing projects.

Fellowships.—The increase of \$280,000 will provide funds for 25 additional awards.

Training.—The increase of \$71,000 will provide funds for 2 additional grants in the dental graduate program.

Laboratory and clinical research.—The increase of \$388,000 and 6 positions will allow for expansion of research in dental caries and oral and related diseases.

Collaborative research and development.—The increase of \$147,000 and one position will allow for expansion of research and development of an adhesive dental restorative material.

Biometry, epidemiology and field studies.—The increase of \$6,000 will support increased operating expenses.

Review and approval of grants.—The increase of \$23,000 will support increased operating expenses.

Program direction.—The increase of \$7,000 will support increased operating expenses.

Research grants

	1967 estimate	1968 estimate	Increase (+) or decrease (—)
Research projects.....	\$10,605,000	\$11,173,000	+\$568,000
Special programs.....	4,521,000	4,736,000	+215,000
Total research grants.....	15,126,000	15,909,000	+783,000

PROGRAM PLANS FOR 1967 AND 1968

The regular program will support approximately 300 research projects in more than 100 institutions during 1967 and 1968. The increase includes \$288,000 for non-competing continuation grants with the remainder, \$280,000, being allocated for competing grants.

Dental caries and hard tissues studies

There is a critical need for extensive epidemiological studies of factors responsible for variations in the worldwide incidence of dental caries, ranging from nearly 100 percent in this country to essentially zero in some primitive areas. Research on the geographic pathology of tooth decay should help clarify the role of streptococci, as well as the interaction of dietary and genetic factors, in human caries.

Factors affecting the incorporation of fluoride in the tooth structure also require further investigation. It is necessary to determine the precise crystal structure of dental hard tissues, the process by which they become mineralized, and their chemical interaction with body fluids. New and expanded programs will thus emphasize basic research on the molecular structure of these tissues and on their mineral prototypes which occur elsewhere in nature or can be synthesized in the laboratory. Greater emphasis will also be placed on the role of the fluoride ion in the general metabolic sense, and particularly with regard to its effects on bone metabolism.

Additional information is required to explain the basic biochemical and physiological properties which characterize the types of bacteria associated with caries in crevices, on smooth surfaces, and on root surfaces of the teeth. The finding that caries-conducive streptococci can colonize on the teeth in adherent deposits (plaques) has led to studies of the interaction between specific microorganisms, different carbohydrates (sugars and starches) and the chemical nature of the tooth surface. Rampant decay in animals can be induced by feeding a diet containing sucrose and by inoculating specific streptococci isolated from humans or animals. When this occurs the microorganisms involved produce not only acid but also insoluble polysaccharide gums, which appear to be dextrans. Current findings suggest that therapeutic benefit might be attained by finding substances which will solubilize the polysaccharide component in plaque and, if possible, kill the bacteria themselves.

Periodontal disease and soft tissue studies

A knowledge of the normal structure and function of the periodontal tissues is a prerequisite to understanding the nature of periodontal disease. During 1967, studies in this area will be expanded with special emphasis on the biochemistry of collagen. The breakdown of this protein is a major factor in the pathology of periodontal disease. Additional study of the molecular structure of collagen and of enzymes which cause its degradation will be encouraged.

Since periodontal disease, similar to that in humans, can be produced by a specific bacterium in animals, the search to identify other causative organisms will be intensified during 1967 and 1968. Support will be given to studies of metabolic functions and products of such organisms. Research into the nutritional and hormonal status of host tissues, inadequate oral hygiene, tartar, impaced food, trauma from malposed teeth, and fluoride ingestion will be encouraged.

Calculus, a concretion that forms on the surface of teeth, is considered to be one of the major causes of periodontal disease. Studies of factors which are believed to contribute to the formation of calculus, such as bacteria, salivary composition, and diet, will be supported. It is anticipated that these investigations will lead to the development of chemotherapeutic methods to prevent calculus formation.

The immunologic aspect of periodontal disease is an area requiring a great deal of attention. Current explorations suggest that, in some forms of periodontal disease, one or more antigens in bacterial cells cause an allergic inflammation of the gingival tissues. Other evidence suggests that the body may have a natural immunologic defense against certain oral bacteria associated with periodontal disease. Research will be initiated in this area with the ultimate goal of developing immunizing agents to suppress or destroy bacteria or bacterial products associated with periodontal disease. At the same time, histopathological studies will be further expanded to clarify the relation between gingival inflammation and collagen destruction and bone resorption, in the hope of eventual control of this disease.

Oral and dental infections and conditions

Oral ulcerations occur in well over half of the population and range in severity from an occasional sore to almost constant outbreaks of painful blisters. The principal types of oral ulcerations, which have the common characteristic of recurring at irregular intervals during a person's life, are herpes simplex (fever blisters or cold sores) and aphthous stomatitis (canker sores).

During 1967 and 1968, studies will be initiated to: 1) elucidate the tissue alteration and pathogenesis of the various disease conditions; 2) clarify the histological characteristics of each type of lesion; and 3) develop methods of improving diagnostic technics for these diseases.

Oral neoplasia

Studies during 1967 and 1968 will be expanded to obtain more definitive information on the nature of tissue changes in leukoplakia and to determine the conditions under which these lesions become malignant. The physiology of normal and abnormal reactions of oral epithelium will also be subjected to extensive microscopic and chemical investigations to provide baseline data for studies of specific neoplastic conditions. Special attention will be focused on the maturation and keratinization of the oral mucosa. Studies of patients with oral lesions considered to be precancerous will be initiated. Technics to improve diagnostic procedures will receive a high priority. Projects to develop therapeutic and prophylactic measures and to determine specific etiologies will be started. In addition, epidemiological investigations are planned to determine the possible role of environmental, nutritional, and genetic factors in the etiology of oral cancer.

Oral physiology and endocrinology

In the study of oral physiology and endocrinology, major emphasis will be given to the largely neglected area of salivary glands. During 1967 and 1968, current studies will be expanded to: 1) further investigate structure of the salivary glands; 2) clarify the metabolism of proteins by salivary glands, and determine the sites of transfer of amino acids and their metabolites into saliva; and 3) define the role of the autonomic nervous system in the maintenance of normal structure and function. This research should help delineate the mechanism of secretion of the organic compounds found in saliva and clarify the biological significance of certain secretory components in oral disease.

Normal and abnormal growth and development including congenital (genetic) and acquired diseases and anomalies

The evaluation and refinement of surgical and rehabilitative treatments for the cleft palate child is to be continued during 1968. Studies of psychosocial factors which affect the adjustment of the cleft palate individual and his family to society will be initiated as corollaries to these studies.

New and expanded studies of the causes of the cleft syndromes to clarify genetic and developmental factors are to be emphasized. It is proposed that two centers for multidisciplinary studies into the etiology of clefts be started during 1968. The development of interceptive and corrective treatment procedures for malocclusion will be initiated. Anthropological and other related studies are needed to provide information concerning the normal growth and development patterns of the oral-facial region. Such knowledge is necessary for the early diagnosis of incipient malocclusion. Proceeding from this base, clinical orthodontic research programs will be needed to develop practical techniques to prevent malocclusion and thereby reduce or perhaps eliminate the need for corrective therapy.

Materials science

Specific attention will be directed to the development of an adhesive filling material that will bond chemically to the surface of a tooth. As part of the broad study of physical and chemical properties of synthetic and biological materials and their relations to the oral environment, bonding mechanisms and properties of various substances will be examined.

Greater emphasis will also be placed on the development of biologically acceptable implants to replace lost or missing teeth. Continuing studies over the past five years show that plastic implants have been uniquely successful in being maintained in the jaws of subhuman primates in the same functional capacity as are natural teeth. It is anticipated that clinical trials with human subjects will be conducted in the early future.

Efforts are being made to spur progress in materials science by bringing the skills and knowledge of industry increasingly to bear on oral health problems. A beginning has been made in such areas as the development of adhesive dental restorative materials. An important need is the broader application of biomedical engineering research, specifically the advances made possible by space technology.

The number of individuals suffering aesthetic and functional defects from radical surgery for the removal of cancerous tissue is increasing. The impressive survival rate of these persons, who now appear as 30,000 new cases each year, and the increasing number of congenital oral-facial defects in the expanding population, impose an obligation to place greater emphasis upon developing prostheses (replacement parts) which are more functional and which better meet aesthetic requirements. Studies which characterize the physical, chemical, toxicological, and aesthetic properties of materials for maxillofacial prosthesis will be expanded, and clinical evaluations will be made as new materials become available. One new aspect of this research will focus on polymer degradation due to mechanical stress, chemical absorption, surface defects, and ultra-violet light exposure. Materials and fabrication methods will be altered to eliminate or circumvent failure of the restoration.

Dental research institutes (centers)

A beginning has been made in establishing several dental research institutes as centers of excellence in the sciences related to oral health.

Thus far, in 1967 one application has been approved and funded for the planning of such an institute at the University of Washington in Seattle, and four others are being negotiated for similar planning or developmental phases of research institute support. We view these centers as bringing to bear on oral health problems not only the traditional healing arts but also the broader biological sciences, the behavioral and social sciences, and the engineering and other physicochemical sciences. Their broad academic settings also provide unique environments for training researchers and academicians.

Distribution of research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations.....	212	\$7, 449, 000	220	\$7, 737, 000	+8	+\$288, 000
2. Competing projects.....	91	3, 156, 000	91	3, 436, 000	0	+280, 000
3. Subtotal, regular program.....	303	10, 605, 000	311	11, 173, 000	+8	+568, 000
4. General research support.....		1, 079, 000		1, 294, 000		+215, 000
5. Scientific evaluation.....		42, 000		42, 000		0
6. Categorical clinical research centers.....		400, 000		400, 000		0
7. Dental research institutes.....		3, 000, 000		3, 000, 000		0
8. Total research grants.....	303	15, 126, 000	311	15, 909, 000	+8	+783, 000

Research grants program analysis

Fields	1967 estimate	1968 estimate	Increase or decrease
Dental caries and hard tissue studies.....	\$3, 235, 000	\$3, 353, 000	+\$118, 000
Periodontal diseases and soft tissue studies.....	1, 984, 000	2, 034, 000	+50, 000
Oral and dental infections and conditions.....	69, 000	119, 000	+50, 000
Oral neoplasia.....	142, 000	242, 000	+100, 000
Normal and abnormal growth and development including congenital (genetic) and acquired diseases and anomalies.....	3, 157, 000	3, 207, 000	+50, 000
Oral physiology and endocrinology.....	569, 000	619, 000	+50, 000
Materials science.....	1, 449, 000	1, 599, 000	+150, 000
Subtotal regular program.....	10, 605, 000	11, 173, 000	+568, 000
General research support grants.....	1, 079, 000	1, 294, 000	+215, 000
Scientific evaluation and planning.....	42, 000	42, 000	0
Categorical clinical research centers.....	400, 000	400, 000	0
Dental research institutes.....	3, 000, 000	3, 000, 000	0
Total research grants.....	15, 126, 000	15, 909, 000	+783, 000

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Fellowships

	1967 estimate	1968 estimate	Increase or decrease
Total fellowships.....	\$1,691,000	\$1,971,000	+\$280,000

Program plans in 1967 and 1968

The fellowship program complements the training grant program by providing training opportunities in qualified departments in colleges and universities which do not have training grant support. A wider selection of training disciplines and locations is thereby afforded.

Support for advanced research training not commonly available under the training grant program also is provided under the special fellowship and research career development award portions of the fellowship program.

An increase of \$280,000 is requested, of which approximately \$83,000 will be used to support 10 additional regular fellowships, and \$197,000 will be used to support 15 research career development awards. Special emphasis will be placed on such areas as: the etiology and epidemiology of periodontal disease, diseases of the salivary glands and the role of their secretions in oral health, psychological factors underlying dental problems, and cleft palate and orthodontic problems.

Distribution of fellowships

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Continuations:						
(a) Noncompeting.....	79	\$1,216,000	88	\$1,355,000	+9	+\$139,000
(b) Competing.....	5	80,000	10	120,000	+5	+40,000
2. Supplementals.....	(5)	6,000	(5)	6,000	(0)	0
3. New awards.....	51	389,000	62	490,000	+11	+101,000
4. Total fellowships.....	135	1,691,000	160	1,971,000	+25	+280,000

Fellowships (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Predoctoral.....	10	\$57,000	15	\$93,000	+5	+\$36,000
2. Postdoctoral.....	63	522,000	63	522,000	0	0
3. Special.....	15	133,000	20	180,000	+5	+47,000
4. Research career:						
(a) Career.....	4	112,000	4	112,000	0	0
(b) Development awards.....	43	867,000	58	1,064,000	+15	+197,000
5. Total fellowships.....	135	1,691,000	160	1,971,000	+25	+280,000

Training grants

	1967 estimate	1968 estimate	Increase or decrease
Total training grants.....	\$5,398,000	\$5,469,000	+\$71,000

Program plans for 1967 and 1968

The graduate training grant program continues to provide the major source of support for individuals training for careers in dental research and teaching.

Recent developments have emphasized the importance of microbiological research to the ultimate alleviation of the dental caries problem. The striking geographic differences in the occurrence of this disease underline the importance of epidemiologic studies to determine the causes of these variations. Accordingly, it is proposed to initiate training programs to provide additional scientists qualified in these two research fields.

Research on the etiology and treatment of malocclusion, a condition which affects a high proportion of children is primarily concerned with facial growth and development. In order to expand this area of research, the Institute plans additional programs which will train individuals with the necessary clinical skills in the disciplines associated with development; e.g. embryology, anthropology, and genetics.

More information is needed concerning the patterns of initiation and progression of periodontal disease in various population groups on a long-term basis. It is proposed, therefore, to augment the Institute's training efforts to provide scientists with skills in such fields as nutrition, genetics, the behavioral and social sciences, and epidemiology and biometry.

There is an urgent need for increased research in dental biomaterials such as those employed in the restoration of lost tooth structure and in the correction of facial disfigurement resulting from congenital malformations and from oral and facial cancer. To increase the scientific capabilities devoted to these important objectives, additional training opportunities will be provided in disciplines such as polymer chemistry, metallurgy, ceramics, solid state physics, and special fields of engineering.

Distribution of training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Continuations:						
(a) Noncompeting.....	82	\$3,843,000	75	\$3,525,000	-7	-\$318,000
(b) Competing.....	14	888,000	32	1,572,000	+18	+684,000
2. Supplementals.....	(10)	176,000	(10)	180,000	0	+4,000
3. New grants.....	13	466,000	4	167,000	-9	-299,000
4. Scientific evaluation.....	(1)	25,000	(1)	25,000	0	0
5. Total training grants.....	109	5,398,000	111	5,469,000	+2	+71,000

Training grants (by type program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Graduate training grants:						
1. Basic sciences.....	86	\$4,268,000	88	\$4,339,000	+2	+\$71,000
2. Clinical sciences.....	23	1,105,000	23	1,105,000	0	0
3. Scientific evaluation.....	(1)	25,000	(1)	25,000	0	0
4. Total training grants.....	109	5,398,000	111	5,469,000	+2	+71,000

Laboratory and clinical research

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	232	\$2,177,800	237	\$2,324,900	+6	+\$147,100
Other expenses.....		1,862,200		2,273,100		+410,900
Total.....	232	4,040,000	237	4,598,000	+6	+558,000

INTRODUCTION

The ultimate goal of the Institute continues to be that of reducing the prevalence of oro-facial malfunction, irrespective of whether it expresses itself in the form of dental caries, periodontal disease, oral cancer or of anomalous oro-facial development. This essential end point can be attained only upon the accumulation and application of a substantially larger body of information regarding causal factors than is presently at hand.

Implementation of the Institute's mission is being served simultaneously by a tripartite research approach involving: 1) basic laboratory investigations of relevance to oro-facial disease; 2) clinical and applied investigations relating to specific disease entities; and 3) epidemiological and field studies, largely directed toward determining feasibility and efficacy of concepts and/or technics generated by the laboratory and clinical endeavors to alleviate oro-facial disease.

PROGRAM PLANS IN 1967 AND 1968

District caries

Basic laboratory studies in the Institute have already demonstrated that a strain of streptococcus is strongly implicated in the genesis of dental decay in laboratory animals. Clinical investigation of so-called "caries susceptible" humans has also revealed that similar bacteria may be isolated from the oral cavity. The recent development of technics which permit isolation, cultivation, and preservation of the human bacterial sample now provides the means whereby additional laboratory and clinical studies may be undertaken, with particular reference to characterizing the organism in terms of its metabolic requirements, and ultimately in terms of its vulnerability to specific antibiotic or related prophylactic measures.

Moreover, these technical developments now permit additional epidemiological study directed toward elucidation of the factors which may influence the prevalence and virulence of this and related organisms in large patient populations.

Notwithstanding the probable role of oral microorganisms in the genesis of dental decay, it is now well established that the addition of fluoride, either by direct (topical) application to the teeth, or by its inclusion in the drinking water, can alter the dental enamel in such a way as to make it less susceptible to decay. The institute takes pride in its past role in the development of this significant contribution to the nation's health, and maintains a strong interest in gathering further knowledge concerning the as yet incompletely documented potential of this unique substance. Consequently, basic laboratory investigations on the mechanism by which the fluoride ion alters enamel structure, especially with respect to its possible use in reversing the early caries process, are continuing. Similarly, considerable effort is being expended in the area of field testing, with emphasis on the epidemiological efficacy of newer methods of topical application of fluoride to the teeth of young people.

Periodontal disease

As in the case of dental caries, laboratory animal experiments have now revealed that a filamentous microorganism, previously isolated from a diseased periodontum, elicits a response in the host which is clinically similar to human periodontitis. The significance of this finding to the human condition, however, requires much additional study, particularly in terms of characterization of the organism, as well as of its incidence in the normal and diseased human oral cavity.

Laboratory and clinical studies, which emphasize our need to know much more regarding the chemical and metabolic properties of the oral connective tissues, continue to be an integral facet of the Institute's total research endeavor. These studies are designed to determine the nature of the factors which normally influence the synthesis and breakdown of the major structural constituents of connective tissue, proteins, collagen, and elastin, the integrity of which is seriously compromised in periodontal disease. At the clinical level, too, greater emphasis is to be given to the possible role of systemic factors, including nutrition, drugs and hormones, systemic diseases, etc., in determining the susceptibility to and severity of periodontitis. Further clinical and epidemiological effort will be applied to the performance of the relationship between the various clinical signs of periodontal disease and its pattern of development, with the ultimate goal of determining rational methods of clinical therapy, which up to this point in time have been largely empirical.

Oral cancer

Certain white patches of tissue on the lip, tongue or mouth lining, generally categorized as leukoplakia, are thought to be precancerous. Current research will be expanded to seek more definitive information on the nature of tissue changes in leukoplakia, utilizing biochemical and ultrastructural methods in the laboratory. In addition, clinical and epidemiological investigations of the prevalence and natural history of leukoplakia, with particular reference to environmental factors which may increase the probability of malignant transformation in the lesion, will form an integral part of the total Institute effort with regard to oral cancer.

Growth and development

Oral clefts, which are among the most common oral-facial defects at birth, result from a failure of the right and left segments forming the lip and the roof of the mouth to unite along a line beginning at the lip and extending through the hard and soft palate. Thus, there is no intact partition between the oral and nasal cavities. Dental abnormalities, such as malformed teeth and arches, are characteristic of this condition. Total collapse of the maxillary arch is common with attendant orthodontic, prosthodontic, and orthopedic problems. Impairment of speech, breathing, and swallowing, and increased susceptibility to upper respiratory infections frequently result.

Successful rehabilitation of the cleft palate child involves the coordinated efforts of many specialists, including orthodontists, prosthodontists, plastic and oral surgeons, otolaryngologists, psychologists, speech therapists, and social workers. It is estimated that the total direct costs for treatment of a single case, covering the period from birth to sixteen years of age, run from \$5,000 to \$10,000, with variations depending upon the region of the United States in which treatment is given.

In order to clarify the role of genetics and environmental factors in the incidence of cleft palate, detailed genetic, social, medical, and reproductive histories of 100 Pennsylvania families with oral clefts are being obtained. Information emerging from this investigation, as well as currently supported studies on twins, will be useful for both predictive and counseling purposes.

Included in this net increase is \$18,000 for mandatory items such as annualization of positions new in 1967, offset by \$7,000 for one less day of pay in 1968. There is also an increase of \$159,000 for centrally furnished services from the National Institutes of Health Management fund.

Collaborative research and development

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	3	\$34,400	4	\$47,200	+1	+\$12,800
Other expenses.....		676,600		812,800		+136,200
Total.....	3	711,000	4	860,000	+1	+149,000

PROGRAMS FOR 1967 AND 1968

These funds will be utilized primarily in research and development of a satisfactory adhesive dental restorative material in collaboration with industrial laboratories, universities, and research organizations.

Collaborative research activity will further emphasize research on implantation and transplantation techniques, including basic studies related to tissue-implant/transplant reactions.

In addition it is planned to study the natural cements produced by barnacles, and possibly other aquatic animals or plants, which naturally withstand temperature changes, pressures, reactive chemicals, and still adhere for years to anything solid in an aqueous environment. Moreover, these cements attract mineral salts from water to increase the area of attachment as time goes on.

Included in this net increase is \$2,000 for centrally furnished services from the National Institutes of Health Management Fund.

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Biometry, epidemiology, and field studies

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	23	\$254, 400	23	\$260, 400	0	+\$6, 000
Other expenses.....		172, 600		174, 600		+2, 000
Total.....	23	427, 000	23	435, 000	0	+8, 000

PROGRAM PLANS IN 1967 AND 1968

Biometric and epidemiological field studies require the application of dental and medical knowledge to human population studies and require original research in mathematical statistics, demography and general methodology for data handling, reduction and analysis.

Epidemiologic studies are being conducted to further clarify the interactions of factors responsible for tooth decay; that is, to determine whether decay producing organisms are natural inhabitants of the oral cavity or whether organisms must be transmitted to the oral cavity before the disease can be established. Another approach is an investigation of the geographic pathology of caries. In this connection, it is planned to conduct field studies in various areas of the Middle East and Africa, such as Ethiopia, where one of the lowest frequencies of tooth decay in the world is found, before encroachments of civilization change this pattern.

Similarly invaluable knowledge can be gained about periodontal disease and growth and development from studies of groups of individuals still living under relatively primitive conditions.

The genetic factor in studies of a broad segment of general population is very much in evidence. For the first time, it has been demonstrated in clinical surveys that heredity is a factor in dental caries.

Included in this net increase is \$2,000 for centrally furnished services from the National Institutes of Health Management Fund.

Review and approval of grants

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	40	\$378, 000	40	\$388, 000	0	+\$10, 000
Other expenses.....		241, 000		274, 000		+33, 000
Total.....	40	619, 000	40	662, 000	0	+43, 000

The funds for this activity support the Institute's scientific, managerial, and clerical staff, the National Advisory Dental Research Council and various other subcommittees in the direction and coordination of the grants program. The Council and staff are responsible for stimulating research interest in areas of critical need, reviewing, analyzing, and processing of the research and training grant applications, as well as maintaining a continuing review of ongoing research and training programs.

Included in this net increase is \$21,000 for centrally furnished services from the National Institutes of Health Management Fund, offset by \$1,000 for one less day of pay in 1968.

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	26	\$241,400	26	\$248,400	0	+\$7,000
Other expenses.....		150,600		154,600		4,000
Total.....	26	392,000	26	403,000	0	+11,000

This activity supports the overall administration, coordination, and direction of the varied programs and activities of the Institute. The Director and his immediate staff are responsible for the overall program development and review of new areas of focus and interest, as well as introducing new knowledge into current operating programs.

Included in this net increase is \$4,000 for centrally furnished services from the National Institutes of Health Management Fund.

New positions requested, fiscal year 1968

	Grade	Annual Salary
Laboratory and clinical research:		
Microbiologist.....	GS-9	\$7,696
Research technician.....	GS-7	6,451
Dental directors (2).....	CO	33,838
Senior dental surgeons (2).....	CO	24,424
Total (6).....		72,409
Collaborative research and development: Scientist administrator.....	GS-13	12,873
Total new positions, all activities (7).....		85,282

DENTAL SCIENCES AS PART OF BIOLOGY AND MEDICINE

Senator HILL. Now Dr. Kreshover.

Doctor, it is nice to have you here.

Dr. KRESHOVER. It is nice to be here.

Senator HILL. You may proceed now in your own way, sir.

Dr. KRESHOVER. Mr. Chairman, and members of the committee, may I, Senator Hill, in a few very brief words give a preface to my prepared opening statement?

Senator HILL. All right, sir.

Dr. KRESHOVER. And say that underlying our Institute's total effort of progress and achievements is the recent emergence of the dental sciences as a true and integral part of the broad base of biology and medicine. I believe this is particularly exciting because it now reflects the opportunity of the Dental Institute in its setting to advance the dental sciences and relevant graduate educational programs along a broad base. Engaging the fundamental sciences and the clinical opportunities at our command, we hope to achieve the kind of application that only this underpinning can provide us with the tools to accomplish.

CHILD DENTAL CARE

Since I came before you last year, several events have illuminated the dimensions of these problems and have given new urgency to their solution. One of these is the report from Operation Headstart, which again emphasized the fact that dental ills rank first among

children's health problems. Another impetus is provided by the Nation's growing concern that no child be denied necessary dental care.

ORAL DISEASES RESEARCH

Last fall, as you know, the Dental Institute, as part of a broad NIH analysis, submitted to the President a detailed report on the magnitude of the various oral diseases, our current activities, and projected plans to cope more effectively with these problems. In preparing this material, we were again struck by the disparity between the total dental needs in this country and the existing level of care. It is apparent that we could not begin to summon the necessary professional and auxiliary manpower to meet all these needs. Moreover, the economic burden of providing adequate treatment—estimated at \$20 to \$25 billion for the first year alone—would be staggering. The responsibility inescapably lies with research to provide more effective preventive and control measures.

Senator HILL. You found the American Dental Association most interesting and helpful, didn't you?

Dr. KRESHOVER. Most certainly, they have been and are continuing to be.

ANTICARIES TECHNIQUE DEMONSTRATED

For this reason, I am particularly happy to be able to report to you today on successful field trials of a new technique to control dental caries. This disease, you will recall, represents a significant portion of the total problem of oral disorders. For a few minutes each school-day, during a 2-year study period, children in a nonfluoridated community were individually fitted mouthpieces filled with a gel preparation containing 1.1 percent sodium fluoride. Of particular public health interest is that a single dental hygienist, using this method of application, was able to supervise several hundred children—many more than is possible with current techniques of topical treatment. The significant caries reduction, in the magnitude of 80 percent, and the preliminary finding that much higher concentrations of fluoride appear in the outer layers of tooth enamel than after conventional methods, provide reason for considerable optimism regarding early utilization of this treatment procedure in community health service programs.

A study recently begun in Charlotte, N.C., has been designed to determine whether there are additive effects when this treatment method is employed in a community already protected by fluoridated water.

Senator HILL. I remember when the question came up about the fluoridation of water here in the District of Columbia there was some opposition to it.

Dr. KRESHOVER. Yes, sir.

Senator HILL. I happened at that time to be chairman of the Senate Committee on Appropriations for the District of Columbia. I consulted the American Dental Association. They said it ought to be done. We put the money in for the program and, as you know, it has been carried out.

Dr. KRESHOVER. As you of course recall, the American Dental Association's assurance to you and to the District was a consequence of the

pioneering work that the National Institute of Dental Research did to acquire this new knowledge.

Senator HILL. Yes, I appreciate that.

DENTAL CARIES

Dr. KRESHOVER. As you know, the problem of dental caries is being attacked on a broad front by the biochemist, the microbiologist, the histologist, and other scientists. As an extension of our laboratory efforts, we are also conducting epidemiologic studies to further clarify the interactions of the three factors responsible for tooth decay: a caries-conducive diet, susceptibility of the individual, and decay-causing germs.

CARIES-INDUCING STREPTOCOCCI

Work done by our scientists and their collaborators has progressed to the point where we can now identify certain types of streptococci associated with caries. But only in the past year, I might add, has a practical technique been developed for the detection and enumeration of caries-inducing streptococci in the field situation of population studies. A beginning has been made in this epidemiological work by taking samples of dental plaque from the children participating in the fluoride gel study in Charlotte, N.C. More extensive studies are planned to determine whether decay-producing organisms are natural inhabitants of the oral cavity in population groups with low caries experience, or whether the organisms must be transmitted to an individual before the disease can be established.

Senator HILL. That would be a very interesting study, would it not?

Dr. KRESHOVER. We have great hopes for this study. As you know, Senator, the accepted procedure for fluoridation of communal water supplies provides a reduction in the magnitude of some 60 percent of dental caries incidence, whereas the complementing or the additive effect of the topical application might, if demonstrated, be a boon to our society.

FIELD STUDY IN MIDDLE EAST AND AFRICA

One obstacle to obtaining such data has been the lack in this country of a large, readily accessible group of relatively caries-free individuals. We now have an opportunity for such a study through a grant that will shortly be awarded to an American university for the investigation of the geographic pathology of caries. This project will provide for an epidemiologic outpost to be set up at the U.S. Navy's research facilities in Cairo, Egypt, thereby making it possible for investigators to conduct field studies in various areas of the Middle East and nearby Africa. In one such approach, Ethiopians, who have one of the lowest frequencies of tooth decay in the world, will be surveyed before progressive socioeconomic changes make their impact.

Senator HILL. That is interesting, is it not?

Dr. KRESHOVER. Yes, sir; it is. We believe that the epidemiological tool of research is one that is extremely important to exploit at the earliest possible time.

ORAL-FACIAL GROWTH OF TWINS AND SINGLE-BORN SIBLINGS

While the information emerging from these studies will fill some serious gaps in our knowledge, concurrent studies in the United States are also valuable in the total spectrum of data that will add to our understanding of oral disease problems. Among these is a grant-supported study of twins and their single-born siblings which seeks to learn whether heredity or environment exerts the dominant influence in determining oral-facial growth. The role of genes was further clarified by new research data that confirm the similarity among siblings, and in greater degree among twins, of certain types of dental development. In another recent study, however, despite the appearance of a general familial relationship, various aspects of occlusion could not be significantly correlated among siblings.

BODY STRUCTURE OF PARENTS AND CHILDREN

A related project on dental development draws on a 35-year collection of longitudinal data on somatic, biochemical, and behavioral growth concerning three generations, and more than 1,000 individuals. A significant aspect of this latter study is that it permits comparisons to be made between children and their parents at the same age, and explores the effects of matings between people with similar bodily structure and size and those with sharply dissimilar physical traits.

ORAL-FACIAL AND BIRTH DEFECTS

In parallel studies, environmental influences were brought into focus by examination of oral-facial and other birth defects among Caucasians and Negroes. The higher socioeconomic groups were found to have a lower incidence of defects.

CONGENITAL DEFECTS

The genetic factor in broad racial groups was very much in evidence in an analysis of birth records of over 9,500 American Indians born last year. These infants appeared to be similar to other Mongoloid populations in the number and types of congenital defects. Harelip and cleft palate, in particular, were more common. Studies of a broader segment of the general population indicate that approximately 50 percent of the cases of harelip with or without cleft palate and 25 percent of the cases of cleft palate alone have a hereditary basis.

We hope that research will one day make it possible to provide more precise genetic counseling to members of families with a history of clefts.

Senator HILL. You can't give them much counseling now, can you?

Dr. KRESHOVER. Not very much, Senator Hill. The oral facial malformation of cleft lip or cleft palate is extremely complex. It relates to a complexity of factors, both genetic and environmental. It is our effort today, particularly through laboratory studies, as well as through carefully controlled population studies, to make a determination of the extent to which these two broad components influence the lesion.

I might say, if I might for just a moment, that in some of our laboratory studies conducted by Dr. King in the course of the last few years, it was possible to establish an experimental model system utiliz-

ing certain chemicals that, for the first time, gave us important evidence regarding the unique movements of the two halves of the palate during the embryo's life and how they fail, under certain situations, to move toward and unite at the midportion of the palate.

In other genetic studies, a hereditary factor in dental caries has been demonstrated for the first time in clinical surveys. Using a recognized genetic marker technique, our investigators found that the ability to taste phenylthiocarbamide is consistently related to the incidence of tooth decay. Thus, tasters of this substance have from 28 to 40 percent lower caries rates in their deciduous teeth.

Genetic studies of this type, as illustrated here, shed much light on the pathogenesis of oral diseases. They and related epidemiological investigations will be given ever-increasing attention as research frontiers of unlimited promise.

PERIODONTAL AND BONE DISEASES

Promising work on the relation to periodontal disease of a collagen-destroying enzyme (collagenase), whose discovery in human gingival tissue was reported to this subcommittee last year, is continuing, together with the further identification of specific causative microbial factors. In addition, earlier and continuing work by the Dental Institute on how fluoride affects the composition and structure of bone has provided a scientific base for current clinical applications in the treatment of osteoporosis.

If I may here just briefly call attention to the fact that this work is attributed to the kind of support that the National Institute of Arthritis and Metabolic Disease has provided to a study in North Dakota, which we have been extremely interested in because it does relate to the effects of fluoride on osteoporosis, a disease that is of much interest to that Institute as well as to us.

CLEFT PALATE AND SPEECH

Our special report to this subcommittee describes a number of significant advances in improved diagnosis and therapy for cleft palate and its associated speech disorders. As our basic knowledge grows and as corrective techniques are developed and refined, research holds greater assurance that victims of this common birth defect can achieve near-normal appearance and speech. A firm scientific base for these and related studies is being provided by an increasing research emphasis on causative factors, both in laboratory and in clinical-epidemiological investigations.

ORAL SENSATION AND PERCEPTION

One aspect of facial deformity that we know little about is the problem of improper sensory-motor integration. Gradually, however, new insights are emerging from the collaborative program on oral sensation and perception begun by the Institute in 1964. A significant contribution was the recent publication of a report on major studies in this complex field, as well as guidelines for future investigators.

Institute and grant-supported scientists, who earlier had shown that the ability of the mouth to feel is related to its efficiency in swal-

lowing, speech, and respiration, have now devised clinical experimental methods to evaluate oral tactile sensory function. One of these methods tests the ability of the tongue to recognize various contours and shapes. This procedure, in which children as young as 4 years of age can cooperate, simultaneously evaluates developmental progress in both the mouth and the brain.

Senator HILL. This is very interesting; is it not?

Dr. KRESHOVER. It is extremely interesting. We most recently had an opportunity in our genetics program, Senator Hill, to identify, as one example, a new disease previously undescribed, a spastic kind of disease, in a county in North Carolina, for which we are now searching for a biochemical cause. This disease, interestingly enough, is one that is uniquely served by this kind of technique for study. It is characterized by a lack of ability to stay erect. These children fall. The people who have identified this disease call it the "falling children disease," interestingly enough. They have a loss of chewing function. They have no sensation in their mouth. They have a skin manifestation—a dry scaly skin, mental retardation, and certain other characteristic features that identify this syndrome.

This, I think, also underscores my preliminary comments of the kind of breadth and broad base that the dental sciences are now engaged in.

ORAL CANCER

Studies of oral cancer are seeking to detect the precancerous state early enough to be able to abort the developing cancer. Grant-supported work is substantiating that certain conditions in the mouth may lead to oral cancer. Accordingly, increasing emphasis is being given by epidemiological, clinical, and laboratory studies to the characterization of precancerous lesions, the better understanding of predisposing and etiological factors, and an assessment of exfoliative cytological techniques for diagnosis.

Senator HILL. You heard Dr. Endicott's testimony this morning?

Dr. KRESHOVER. Yes, sir; and it was most impressive.

Senator HILL. It was impressive. I am sure you are working in close collaboration in this matter.

Dr. KRESHOVER. Yes, sir; we have a beautiful opportunity at NIH to work in close cooperation with all Institutes. This is our strength, really.

Senator HILL. You have a team?

Dr. KRESHOVER. Yes, sir; we surely do.

BIOMATERIALS

Collaborative efforts between the Dental Institute, the National Bureau of Standards, various industrial laboratories, and other research organizations are providing a valuable base of knowledge on the chemical and physical properties of synthetic and biologic materials and their interactions with the oral environment.

Special attention is being directed to the development of improved restorative materials with adhesive bonding properties. In one proposed approach to this problem, the study of natural cements produced by marine plants and animals, such as the barnacle, appears to offer a particularly promising line of pursuit.

In a related study, scientists using a silane adhesive have been able to fasten porcelain teeth to denture bases successfully without pins.

Senator HILL. I believe General Washington had wooden teeth, didn't he?

Dr. KRESHOVER. Yes, sir; he did, and ivory teeth as well. We have made much progress——

Senator HILL. Since Washington's days?

Dr. KRESHOVER. Yes, sir; we have. In a sense, he is one of our dental founders.

It is estimated that this procedure will save \$5 million annually in precious metals. In other grant-supported work, plastic teeth implanted in baboons for study periods of 5 years continue to be retained with effective function.

Senator HILL. My father, who was a doctor, said that a first-year dental student could have saved Washington's life. What he needed was a tracheotomy. It would have saved his life. Instead, they kept taking more and more blood out of him, whereas Dr. Shannon might have been putting in more blood. I don't know.

Dr. SHANNON. I would call in somebody who would know what to do.

Senator HILL. At least, sir, you have demonstrated your modesty.

DEVELOPMENT OF DENTAL RESEARCH INSTITUTES

Dr. KRESHOVER. In coming to the next prepared portion of my statement I would like to depart briefly from it, because we have made more progress in the course of the last few weeks, after the report was submitted to your subcommittee. I will read part of it and change accordingly.

We are very gratified at the support that has made it possible to begin the development of several dental research institutes as centers of excellence in the sciences related to oral health. So far this fiscal year two applications have been approved and funded for the respective planning and development of research centers at the University of Washington in Seattle, and at the University of Pennsylvania. Others also are being negotiated for similar planning or development phases of research in this and in the next fiscal year. We anticipate the establishment, Senator Hill, of six such programs in the relatively near future with what we believe to be an extremely important geographic spread so that we will uniquely serve the East, the West, the north-central area, and the South.

We feel that this program should continue to go forward in view of its tremendous potential contributions and the considerable interest which it has stimulated.

These institutes will bring to bear on oral health problems the diversified resources of a research and educational complex. The resources of a single university may be used or the proposed center may draw on resources available within a region. We view these centers as pooling the knowledge and skills of not only the traditional healing arts but also the broader biological sciences, the behavioral and social sciences, and the engineering and other physiochemical sciences. Through these intensified, coordinated attacks on oral diseases, knowledge of their causes, prevention, and improved treatment will increase rapidly.

TRAINING PROGRAMS

Last fall, concurrent with the reorganization of our extramural activities and the focus on critical personnel shortages identified in our report to the President, we began to reorient our training activities. In speech pathology and biomaterials, particularly, we are stimulating a closer interaction of the basic sciences with dentistry to encourage greater clinical applications. The program to expose selected dental students, as well as undergraduate college students, to laboratory research for several weeks during the summer likewise is proving very successful and will be stepped up this year as a means of attracting young people to oral research.

AMERICAN DENTAL ASSOCIATION COOPERATION

Many of the substantive accomplishments of the Institute and its grantees during the past year are reported in the highlights of research progress. This has been submitted to the committee. This opening statement therefore centered on a few examples of the broadening scope of the dental sciences and related educational activities.

Senator HILL. I might say here, as I have indicated before, you have been very fortunate to have had the fine support of the American Dental Association.

Dr. KRESHOVER. Yes, sir; we most certainly have.

Senator HILL. They have been very, very fine and have been tremendously helpful in supporting the Institute in its work.

Dr. KRESHOVER. And we have profited immensely by the great interest that they have in our programs, and we have maintained our close relations with the dental association in our planning and projections for the future.

BUDGET REQUEST

We are requesting for fiscal 1968 a budget of \$30,307,000, as compared with \$28,404,000 for the current year.

Senator HILL. You say you are requesting. You might say the Budget Bureau is requesting.

You have certain limitations that I don't have, you see.

Dr. KRESHOVER. The increase of \$1,903,000 will permit us to expand those areas of laboratory, clinical, epidemiological, and applied research where needs and opportunities are greatest for work.

BUDGET BUREAU REDUCTION

Senator HILL. You got a reduction of \$2,100,000 from your original request?

Dr. KRESHOVER. Yes, sir.

Senator HILL. How much effect will that reduction have on your programs, your aims, and your goals?

Dr. KRESHOVER. As reflected in our projection for the next fiscal year, Senator Hill, I do believe it will require us to perhaps not move as rapidly as we might otherwise move; that we will have to apply certain rigid standards of priority to certain of our programs and perhaps hold others in some abeyance. The only concern that I would have about this event is the importance, of course, of maintaining a

head of steam and the acceleration and the momentum that many of our programs have gathered, particularly in recent years. We will, of course, have to do our best.

The greatest impact might very well be our inability to fund in the range of 80 important research projects in the course of the next year, and a projection of possibly 10 fewer training grant programs that we would otherwise support. Each training program usually provides an opportunity for 4 or 5 young talented people to receive training so that we have here an aggregate of some 40 to 50 young people who might not then be trained.

Senator HILL. They might not get this training?

Dr. KRESHOVER. This is a possibility; yes, sir.

UNFUNDED RESEARCH PROJECTS

Senator HILL. This year, how many research projects did you have that you could not fund?

Dr. KRESHOVER. So far this year, we would project to the end of the current fiscal year, Senator Hill, that we would not be able to fund approved grants in the number of some 50 to 60. These represent projects, Senator Hill, that have been recommended for approval and payment by our Advisory Council and would not be paid because of inadequate funds.

Senator HILL. How much money would be required to fund these?

Dr. KRESHOVER. I believe our forecast was in the range of \$1.4 million.

TRAINING GRANTS

Senator HILL. How about the training grants?

Dr. KRESHOVER. Our requirements in training would be somewhat less, of course, than those identified in the project area. We would anticipate, Senator Hill, that we will have approved, and inadequate funds to support, something in the range of four training grants. This might represent between 16 and 20 promising young people who will have to hold off for just a bit until we can gear up our programs to provide support for them.

Senator HILL. What chance is there that these young people will lose their interest in this training if you can't go forward with it?

Dr. KRESHOVER. We are extremely dependent, needless to say, on maintaining interest and in providing a degree of career motivation for young people. This is accomplished in a very exemplary way by our extramural staff of professionals who engage in visits to dental and undergraduate schools and attempt to motivate these young people.

There is, of course, always the danger that once a young man or woman is charged up about going forward in a career, if we are not able to get them at that critical time they may very well find themselves attracted to some other field.

Senator HILL. Is there anything you would like to add, Dr. Shannon?

BUDGET ECONOMY CONTINUATION

Dr. SHANNON. No, sir. I would like to emphasize what I said earlier, Senator Hill. In this appropriation, as in the others, although we are concerned about the things we can't do with it, our primary

concern is with the risk that inadequate support will continue over a long period of time rather than as a brief pause. We would hope that the circumstances will be such that the budgets which we consider quite stringent do not obtain for long periods of time.

Senator HILL. If they obtained for long periods it could be very damaging; could it not?

Is there anything you would like to add, Doctor?

Dr. KRESHOVER. No, sir.

Senator HILL. Where is our friend Dr. Arnold these days?

Dr. KRESHOVER. He is in the office of the Surgeon General serving as Chief Dental Officer with Dr. Stewart and his associates.

Senator HILL. We certainly are very much obliged to you. We thank you gentlemen very, very much. That was a good statement.

Dr. KRESHOVER. Thank you, Mr. Chairman.



NATIONAL INSTITUTE OF ARTHRITIS AND METABOLIC DISEASES

STATEMENT OF DR. G. DONALD WHEDON, DIRECTOR; ACCOMPANIED BY W. GILBERT BAYLIS, EXECUTIVE OFFICER; AND DONALD F. CYPHERS, BUDGET OFFICER, NATIONAL INSTITUTE OF ARTHRITIS AND METABOLIC DISEASES; DR. JAMES A. SHANNON, DIRECTOR; RICHARD L. SEGGER, EXECUTIVE OFFICER; AND LELAND B. MAY, ACTING FINANCIAL MANAGEMENT OFFICER, NATIONAL INSTITUTES OF HEALTH; DR. LEO J. GEHRIG, DEPUTY SURGEON GENERAL; CHARLES MILLER, CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

NATIONAL INSTITUTE OF ARTHRITIS AND METABOLIC DISEASES

For expenses necessary to carry out the purposes of the Act relating to arthritis, rheumatism, and metabolic diseases, **【\$135,687,000】 \$143,954,000.**

Amounts available for obligation

	1967	1968
Appropriation.....	\$135,687,000	\$143,954,000
Comparative transfers within NIH.....	-980,000	
Transfer to "Operating expenses, Public Buildings Service," General Services Administration.....	-12,000	
Total.....	134,695,000	143,954,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants:						
Research.....		\$90,629,000		\$96,304,000		+\$5,675,000
General research support grants.....		(8,286,000)		(9,842,000)		(+1,556,000)
Scientific evaluation and planning.....		(20,000)		(20,000)		(0)
Categorical clinical research centers.....		(1,500,000)		(1,500,000)		(0)
Fellowships.....		6,129,000		6,591,000		+462,000
Training.....		14,857,000		15,706,000		+849,000
Direct operations:						
Laboratory and clinical research.....	531	13,248,000	541	14,333,000	+10	+1,085,000
Collaborative research and development.....	25	5,124,000	26	7,736,000	+1	+2,612,000
Biometry, epidemiology and field studies.....	26	730,000	28	751,000	+2	+21,000
Review and approval of grants.....	79	1,924,000	81	2,157,000	+2	+233,000
Program direction.....	22	330,000	25	376,000	+3	+46,000
Total obligations.....	683	132,971,000	701	143,954,000	+18	+10,983,000
Unobligated balance, reserve.....		1,724,000				-1,724,000
Total, obligations and balance.....	683	134,695,000	701	143,954,000	+18	+9,259,000

1852 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	683	701	+18
Full-time equivalent of other positions.....	18	18	0
Average number of all employees.....	670	711	+41
Personnel compensation:			
Permanent positions.....	\$6,437,000	\$6,701,000	+\$264,000
Positions other than permanent.....	190,000	190,000	0
Other personnel compensation.....	50,000	50,000	0
Total personnel compensation.....	6,677,000	6,941,000	+264,000
Personnel benefits.....	688,000	708,000	+20,000
Travel and transportation of persons.....	265,000	330,000	+65,000
Transportation of things.....	60,000	60,000	0
Rent, communications, and utilities.....	158,000	175,000	+17,000
Printing and reproduction.....	55,000	60,000	+5,000
Other services.....	886,000	1,114,000	+228,000
Project contracts.....	5,020,000	7,650,000	+2,630,000
Payment to "National Institutes of Health management fund".....	5,766,000	6,448,000	+682,000
Supplies and materials.....	1,105,000	1,115,000	+10,000
Equipment.....	694,000	770,000	+76,000
Grants, subsidies, and contributions.....	111,615,000	118,601,000	+6,986,000
Subtotal.....	132,989,000	143,972,000	+10,983,000
Deduct quarters and subsistence charges.....	18,000	18,000	0
Total, obligations by object.....	132,971,000	143,954,000	+10,983,000

Summary of changes

1967 enacted appropriation.....	\$135,687,000
Unobligated balance reserve.....	-1,724,000
Comparative transfers within NIH.....	-980,000
Transfer to "Operating expenses, Public Buildings Service," Gen- eral Services Administration.....	-12,000
Total estimated obligations, 1967.....	132,971,000
1968 estimated obligations.....	143,954,000
Total change.....	+10,983,000

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1853

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built-in:				
1. Annualization of new positions authorized in 1967				\$45,000
B. Program:				
1. Research grants		\$90,629,000		5,675,000
2. Fellowships		6,129,000		462,000
3. Training grants		14,857,000		849,000
4. Laboratory and clinical research	531	8,834,000	10	597,000
5. Collaborative research and development	25	5,090,000	1	2,604,000
6. Biometry, epidemiology, and field studies	26	695,000	2	9,000
7. Review and approval of grants	79	750,000	2	52,000
8. Program direction	22	221,000	3	28,000
Subtotal, program increases			18	10,276,000
C. Centrally furnished services from the National Institutes of Health management fund:				
1. Laboratory and clinical research		4,414,000		479,000
2. Collaborative research and development		34,000		4,000
3. Biometry, epidemiology, and field studies		35,000		6,000
4. Review and approval of grants		1,174,000		179,000
5. Program direction		109,000		14,000
Subtotal, management fund		5,766,000		682,000
Total, increases				11,003,000
DECREASES				
1 less day of pay in 1968				-20,000
Total net change requested			+18	+10,983,000

EXPLANATION OF CHANGES

Research grants.—The program increase of \$5,675,000 will provide \$1,556,000 for general research support grants and \$4,119,000 for an estimated additional 46 research projects and general increased average costs.

Fellowships.—The increase of \$462,000 will provide for an estimated additional 24 fellowships in 1968.

Training grants.—The increase of \$849,000 will provide for an estimated additional 8 new training centers and for increased average costs in the existing centers.

Laboratory and clinical research.—The increase of 10 positions and \$597,000 will provide for strengthening of clinical investigations, chemical biology and physics, and scientific reporting; for the purchase of additional electronic computing services; and for renovation and equipping of additional space to be provided by relocation of the NIH library.

Collaborative research and development.—The increase of one position and \$2,604,000 will provide for continued development of the Artificial Kidney-Chronic Uremia Program, and modest strengthening of the scientific communications program.

Biometry, epidemiology and field studies.—The increase of 2 positions and \$9,000 will provide required assistance for present and planned epidemiological and clinical field studies in the Southwestern United States.

Review and approval of grants.—The increase of 2 positions and \$52,000 will provide for strengthening of grants management and analysis activities, and for required electronic data processing costs.

Program direction.—The increase of 3 positions and \$28,000 will provide a modest strengthening of Institute management staff and for required program analysis assistance with reference to Institute programing and budgeting systems.

Research grants

	1967 estimate	1968 estimate	Increase or decrease
Research projects.....	\$80,823,000	\$84,942,000	+\$4,119,000
Special programs.....	9,806,000	11,362,000	+1,556,000
Total research grants.....	90,629,000	96,304,000	+5,675,000

INTRODUCTION

Since its establishment in 1950 as an Institute, the National Institute of Arthritis and Metabolic Diseases role in the Federally-supported campaign against disease has been one of growing responsibility. Originally charged with the conduct and support of research into the causation, diagnosis, and treatment of the various arthritides, the rheumatic and collagen diseases, and metabolic disorders, such as diabetes, this initial responsibility has been broadened to encompass many other disease categories. Among them are endocrine disorders, diseases of the gastrointestinal tract, including diseases of the liver and gall-bladder, diseases of the blood and bone, urological disorders and diseases of the kidney, numerous other metabolic disorders, both acquired and inherited, such as cystic fibrosis, and the fields of nutrition, orthopedic surgery and dermatology.

In pursuit of these goals, relevant fundamental research encompasses the disciplines of biochemistry, chemistry, biology, molecular biology, anatomy, physiology, enzymology, pharmacology, pathology, histology, toxicology, and genetics, as they relate to life processes in health and to diseases that fall within Institute purview. Emphasis is placed on the conduct and support of research in fundamental sciences which constitute the foundation of knowledge pertinent to these diseases. There is an urgent and continuing need to expand these research activities not only from the point of alleviating the suffering of millions afflicted with disease but also to further the concept of preventive medicine. As more basic knowledge is obtained through research about normal life processes and factors that create disease or disease conditions, more effective medical means can be found to prevent or minimize diseases or their effect on the body. This is the ultimate goal, one which demands a much greater body of knowledge than is presently available.

PROGRAM PLANS IN 1967 AND 1968

Arthritis and Rheumatic Diseases

Although lacking the dramatic impact of the "killer" diseases, arthritis is by far the Nation's leading crippler. Because arthritis tends to cripple and disable rather than to kill, it ranks high on the list of chronic diseases from the standpoint of social and economic impact. It causes its victims more prolonged mental anguish and physical pain, agony and misery than any other group of diseases. Surgeon General William H. Stewart recently termed arthritis a national *medical* as well as *economic* problem. This evaluation is more than borne out by Public Health Service health statistics which estimate that approximately 13 million Americans today are afflicted with some form of arthritis or related disorder. The economic impact of this insidious disease, no less astounding than the number of victims, is now estimated to be approaching an annual cost of almost \$4 billion to the Nation, including losses in tax revenue, costs of disability and other payments, costs of hospitalization, physicians' visits, drugs, physical therapy, nursing home care, and other services.

Of the estimated 13 million Americans suffering from arthritis, about 700,000 are so incapacitated as to be unable to work, maintain a home, attend school, or engage in any recreational activities. The remainder suffer from varying degrees of limitations and restrictions. As a cause of restricted activity and bed disability, arthritis is exceeded only by heart disease, as a workloss cause, it is exceeded by heart disease and gastrointestinal ulcers only. Disability from arthritis in the United States causes an estimated 186 million days of restricted activity, including 57 million bed-ridden days and 12 million days lost from work, each year.

The primary goal of research in the field of arthritis is to discover the cause or causes of rheumatoid arthritis, osteoarthritis, and related disorders. Equally

important goals of this program are to improve existing forms of treatment and management, and to determine means of preventing arthritis.

Additional funds provided by the Congress in 1967 for increased efforts in this field are being employed for the establishment of an Arthritis Coordinated Clinical Investigation Program. This will involve a group of clinical investigation centers of excellence working in close coordination in pursuit of possible solutions and improved therapy utilizing most recent findings, techniques, and developments of promise. Particular attention is being devoted to indomethacin and other new therapeutic agents.

The main thrust of present and future research will be into an area where promising new etiologic possibilities recently have been uncovered. Two types of microorganisms recently found to be implicated in joint diseases will be studied in relation to rheumatoid arthritis. Intensive investigations are planned on the possible role of mycoplasmas (microorganisms with characteristics of both bacteria and viruses) in causing rheumatoid arthritis, and viruses belonging to the genus *Bedsonia*. Arthritis has been produced in monkeys by injecting them with *Bedsonia* organisms isolated from human patients with Reiter's syndrome, a disease closely related to rheumatoid arthritis.

Diabetes

Of all the inherited metabolic diseases for which research responsibility lies, diabetes mellitus is the more important and widespread. Today, 4 million Americans are known diabetics. An estimated 5 million more are potential victims. Diabetes ranks 7th as a cause of death due to disease, but this is a misleading, low mark since the disorder contributes significantly to cardiac and cerebrovascular deaths through its vascular complications. The most obvious defect in diabetes is the body's inability to metabolize carbohydrates normally. Underlying the disorder is a basic impairment of insulin activity. Although diabetes today can be controlled fairly well with injections of insulin, through the use of oral antidiabetic drugs, and by the use of dietary measures and controls, there remains considerable need for further improvements in the treatment of this disease and for more effective measures to prevent or to ameliorate its serious complications which are responsible for much of the disability and morbidity connected with the disorder.

Immediate research activities and objectives of this Institute in diabetes focus on: elucidation of the nature of the interference with normal insulin activity and of substances which destroy or inactivate insulin after its releases from the pancreas; possible modification of recently synthesized insulin fractions or of fractions of insulin from other species to provide a therapeutically effective hormone for improved management of diabetes and to serve as a research tool in studying the mechanism of action of insulin; specific studies designed to suppress development of vascular and neurological complications; studies to improve control of "brittle" or juvenile diabetes; and studies to explore possible use of the oral antidiabetic drugs in postponing the onset of overt diabetes in asymptomatic individuals genetically destined to develop this disorder.

Other inherited diseases of metabolism

While diabetes is the most important and most widespread of the inherited metabolic diseases, other serious hereditary metabolic disorders for which this Institute bears responsibility include: gout, cystic fibrosis, certain blood disorders, phenylketonuria, galactosemia, Wilson's disease, alcaptonuria, histidinemia, homocystinuria, and various glycogen storage diseases, familial Mediterranean fever, congenital non-hemolytic jaundice and many others.

Research plans in these areas will focus on the development of new and more reliable patient management by use of specific drugs, such as copper chelating agents in Wilson's disease, or through specialized diets, as in the galactose-free diet in galactosemia.

Metabolic and endocrine disorders (unrelated to genetics)

Studies belonging to this category comprise fundamental research on normal metabolic processes, studies on non-hereditary metabolic disorders, and investigations in the field of endocrinology and of endocrine disorders. All living cells have in common the phenomenon of "metabolism," consisting of an infinite variety of chemical reactions through which the cells derive energy for life processes and produce various chemical substances needed for life, growth and reproduction. Hormones, the specialized chemical messenger substances produced in the endocrine glands of the body are capable in some instances of modi-

lying specific metabolic reactions and in other of modulating an individual's sexual differentiation before birth, his growth, intellectual development, vigor and drive, reproduction, and senescence. Therefore, through their effects on human metabolism, physiology, and morphology, hormones regulate practically all human normal activity and exert profound influence on a wide array of disorders within the Institute's area of responsibility.

Current understanding of hyperthyroidism and hypothyroidism and the known effective methods of therapy and long-term management came about through detailed knowledge of thyroid hormones and of the pituitary hormone thyrotropin which affects the endocrine output of thyroid gland. Similarly, corticosteroid therapy, which is invaluable in treating rheumatoid arthritis, Addison's disease, asthma and other serious conditions, is the outgrowth of our basic understanding of the steroid hormones of the adrenal gland.

In addition, fundamental research which led to the isolation and purification of the pituitary human growth hormone (HGH) now allows some children afflicted by hypopituitary dwarfism to attain a substantial measure of growth through HGH replacement therapy. Due to the scarcity of HGH (its only source are pituitary glands obtained at post-mortem examination), its synthesis holds out the greatest hope for therapy on a large scale for dwarfism. Toward this end, Institute-supported investigators are endeavoring to arrive at an effective method of laboratory synthesis of HGH or to derive a human growth stimulating function from bovine growth hormone, by modifications of this substance.

Research progress in this field, however, is hindered by the lack of fundamental knowledge of the precise mechanisms by which hormones influence metabolism and how they cross-react with each other. A particular obstacle is incomplete knowledge of the exact nature of the structure of cellular membranes which determine the transport of metabolites in and out of cells. The molecular structure of most hormones is not as yet known and there is a lack of pure and potent preparations of endocrine hormones to aid research. Sensitive assays for specific human studies are just being developed. Furthermore, this field of research is hampered by an insufficient number of highly trained, sophisticated investigators.

Of particular significance in research in the last year was the elucidation by a grantee of the composition and structure of human growth hormone, thereby enhancing chances for its eventual synthesis in the laboratory, a prime goal of the Institute.

Gastroenterology and liver disease

Ailments of the gastrointestinal tract are among the most common serious illnesses that afflict modern man. This illness ranks second only to heart and circulatory diseases in the number of required physicians' office visits or house calls. Gastrointestinal ailments include peptic ulcer, regional enteritis, ulcerative colitis, cirrhosis of the liver, gallbladder diseases, pancreatitis, diverticulitis, intestinal malabsorption, and many others. Often, these diseases result in prolonged and expensive hospitalization and innumerable social and economic problems.

The extent of their social and economic impact may be clearly visualized in figures published in 1966 by the Public Health Service in a study entitled "Estimating the Cost of Illness." According to this study, direct expenditures for diseases of the digestive system in 1963 were estimated at \$4.2 billion, higher than direct costs for any other disease category. Another \$1.3 billion in indirect costs also were attributed to diseases of the digestive system. The cost in terms of lost man hours and direct medical expenses due to peptic ulcer alone is estimated at \$500 million annually. About 14 million Americans, or over 7 percent of the entire U.S. population, now have or have had an ulcer of the duodenum or stomach. According to health statistics, an estimated 4,000 individuals develop an ulcer each day, and about 10,000 die of complications of peptic ulcer every year.

Despite significant gains in knowledge, much yet remains to be learned and understood about these disorders. The causes of many gastrointestinal diseases are still unknown, or not fully comprehended, and new methods and techniques of investigation, diagnosis and therapy have been limited. In broad terms, gastrointestinal disorders may be outlined as follows: to increase the basic scientific and clinical understanding of the fundamental processes of digestion, absorption, secretion, excretion and other functions of the gastrointestinal tract, liver and gallbladder in order to improve their medical and surgical treatment; to elucidate more completely the neuronal and hormonal control of digestive secretion;

to devise new medical and surgical treatments in gastrointestinal disease, and in the case of acute liver disease, a growing concern in this area, to provide novel treatment systems to sustain patients through acute liver failure while allowing regeneration of their own functioning liver tissues.

More specifically, Institute-supported research now and in the immediate future will endeavor to extend biochemical studies of enzyme and hormone action in intestinal absorption; emphasize studies of the disordered metabolism of liver failure; develop new surgical methods of treatment of gastrointestinal diseases and new medical treatment modalities, including drugs; develop new research tools and techniques to permit examination of previously inaccessible or difficult areas of the gastrointestinal tract; study of variety of metabolic processes taking place in the cells lining the stomach, intestines and gallbladder so as to relate these processes to gross physiologic activity in normal and abnormal conditions; use the newly synthesized hormone, gastrin, for assessment of gastric secretory function. In connection with the later, in 1966 we reported on the synthesis of gastrin by Institute-supported investigators. This hormone which originates in the mucosa of the lower end of the stomach stimulates secretion of gastric juices. Gastrin synthesis is important especially for research in peptic ulcer, a disease conditions about which little new knowledge has been gained in recent years. It has been known that peptic ulcer victims, particularly those with the duodenal variety, secrete an excess of acid digestive juices but the mechanisms controlling secretion under normal and abnormal conditions have remained obscure. The synthesis of gastrin not only provides a potent secretory stimulant for assessing gastric function but also is important because it opens up entirely new approaches for research in the area of peptic ulcer.

Kidney and urologic diseases

Disorders of the kidney cover a wide range of diseases entities and stem from an equally wide variety of conditions, including hypersensitivity infections, circulation, metabolic, developmental disorders, and obstruction conditions. Among the more common diseases of the kidney are: glomerulonephritis, pyelonephritis, the enphrotic syndrome, and the hypertensive kidney disease. With the passage of time these diseases, regardless of their original cause, tend to progress to a common-end stage with a common clinical picture, uremia, with eventual fatal results. Kidney diseases are particularly important as causes of death in individuals in their middle, most productive years, with 50 percent of such deaths occurring in patients under 65 as compared with 28 percent for heart disease and 19 percent for stroke. Most recent figures compiled by the PHS National Center for Health Statistics indicate that almost 25,000 Americans died of kidney disease in 1964. It is believed that the actual number of annual deaths caused by kidney disease, directly or indirectly, is considerable larger since the latter figure does not include deaths attributed to conditions such as hypertension or stroke which may be secondary to an underlying kidney ailment.

Overall, the goals of the Institute's research activities in this field are to increase the understanding of and to improve the therapy and means of preventing kidney diseases; to obtain a better understanding of the uremia syndrome; and to provide more efficient, economical management of patients with advanced renal failure through development of inexpensive, simple and more effective chronic dialysis treatment. A more distant but ultimate goal is development of long term replacement therapy by kidney transplant. A prime drawback to more rapid progress in the hemodialysis is lack of knowledge concerning specific toxic substances or metabolic products which accumulate in the bloodstream during renal failure and which are responsible for the toxic symptomatology in uremia. Other important general obstacles involve lack of fundamental knowledge of normal kidney biochemistry and physiology and of the pathogenesis and etiology of various forms of renal and urological disease.

In 1966, Institute-supported investigators made significant contributions toward identifying and characterizing the toxic factors in uremia. A study of patients with nephrotic syndrome revealed that such patients have a general cancer incidence 10 times that of comparable population groups. In other research areas, grantees have markedly reduced early failure of kidney homografts by a program of "renal-protective" management (hydrating the living kidney donors immediately before the operation); clarified an aspect of the immune response in kidney homotransplantation; prolonged survival of canine kidney transplants by treating recipient dogs with horse antiserum to dog lymphocytes; and obtained evidence that there is essentially no correlation between the presence of positive urine cultures, positive renal tissue cultures, and the histologic diagnosis of chronic pyelonephritis in juvenile diabetic patients—suggesting that factors other

than the continued presence of bacteria in the kidney play a role in the pathogenesis of chronic pyelonephritis.

Anemias and other blood disorders

The number of individuals afflicted with anemias and other blood disorders in this country is considerable. Many of these conditions are truly hereditary or are conditional by genetic factors. Among the more prominent blood disorders needing solution are: sickle cell anemia and other genetically transmitted abnormalities of the hemoglobin molecule; chronic hemolytic anemias, such as thalassemia or Mediterranean anemia; clotting disorders such as hemophilia, Rh incompatibility, and neonatal thrombocytopenic purpura, a platelet deficiency and bleeding problem in newborn infants. Examples of relatively frequently found abnormalities or disorders in this grouping are sickle cell anemia and Rh incompatibility. Sickle cell anemia affects a significant percentage of Negroes and is associated with considerable disability and shortened life span. Rh incompatibility is an obstetrical complication affecting a recognizable percentage of the population due to the mixed blood type of individual parents.

The field of platelet and white blood cell typing is closely related to the general field of tissue typing, and has, thus, a profound effect on the entire field of organ transplantation; knowledge in this area is now just beginning to unfold. The aims of Institute research support in the field of anemias and blood disorders are to gain a better understanding of blood diseases, their basic causes, treatment and prevention, and to clarify the role of blood factors and elements in coagulation and in certain immunity reactions. In support of these goals, research planning in the present and immediate future encompasses; development of improved methods of treatment, long term management, or prophylaxis of the various major blood disorders; development of practical antihemophilic factor preparations for treating bleeding in hemophilic patients and for prophylaxis before elective surgery; programmed studies on the genetic transmission of the hemophilia trait, sickle cell anemia, and other hereditary blood disorders, with a view toward meaningful genetic counseling; programmed studies on the Rh antigen of red blood cells and of improved prophylactic and therapeutic means of coping with Rh incompatibility in obstetrics; a programmed investigation of blood clotting mechanisms, with emphasis on clarifying the physiological and biochemical action of small peptides released during blood clotting; and increased emphasis on clarifying the immunologic aspect of coagulation disorders and of the structure of fibrinogen, thrombin and hemoglobin. Additionally, emphasis will be placed on understanding the mechanisms of thrombocytopenic purpura and of the composition, structure and characteristics of serum proteins as a mechanism in understanding macroglobulinemia and disproteinemia.

Dermatology

With the exception of pemphigus and long-standing skin cancer, most disorders of the skin are not life threatening. They represent, however, very widespread conditions which can be extremely disabling and incapacitating, both physically and psychologically.

The current state of knowledge in psoriasis graphically illustrates the problems now faced in dermatologic research. Psoriasis is a relatively common, noncontagious skin disorder in which faulty epidemral (skin) metabolism results in disfiguring lesions on the skin surface. The basic cause of psoriasis is unknown, and the disorder occurs in from three to five percent of the population, of which from one to two percent constitute severe cases. Current knowledge of psoriasis and other skin diseases, such as atopic dermatitis, pemphigus, and discoid lupus erythematosus, is inadequate with respect to therapy and basic knowledge of skin physiology. Although skin has certain advantages as a research tool because of its ready availability, it has failed to attract adequate numbers of high quality independent investigators. Because of inadequate knowledge of fundamental concepts, practice and therapy in the field of dermatology, it has remained largely nonspecific, symptom-relieving and empirical, although much aided in recent years by the availability of specific drugs (antihistamines and steroids).

Because basic research in dermatology is still a relatively young and new area of clinical science, the Institute's program in dermatology may be characterized as a probing inquiry into an extremely important field, at a relatively low cost. The program envisioned by the Institute will aggressively seek to expand the fundamental knowledge of both normal and abnormal skin with regard to composition, metabolism, and responses to outside stimuli; to gain better understanding of specific pathogenesis in the various skin disorders; and to devise effective

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therapy and prophylactic measures. Further, it is planned to attract into laboratory and clinical research in dermatology additional well-qualified, research-motivated investigators who have the skills to attain the goals set by the Institute.

Research grants program analysis

Fields	1967 estimate	1968 estimate	Increase or decrease
1. Arthritis.....	\$6,493,000	\$6,635,000	+\$142,000
2. Dermatology.....	1,782,000	1,871,000	+89,000
3. Diabetes.....	4,377,000	4,596,000	+219,000
4. Endocrinology.....	12,840,000	13,583,000	+743,000
5. Gastroenterology.....	10,526,000	11,386,000	+860,000
6. Hematology.....	6,607,000	6,927,000	+320,000
7. Metabolism.....	20,272,000	21,216,000	+944,000
8. Nutrition.....	6,432,000	6,754,000	+322,000
9. Orthopedics.....	3,401,000	3,571,000	+170,000
10. Urology and kidney diseases.....	5,193,000	5,453,000	+260,000
11. Other or interrelated areas.....	2,900,000	2,950,000	+50,000
12. Subtotal.....	80,823,000	84,942,000	+4,119,000
13. General research.....	8,286,000	9,842,000	+1,556,000
14. Scientific evaluation and planning.....	20,000	20,000	0
15. Categorical clinical research centers.....	1,500,000	1,500,000	0
16. Total obligations.....	90,629,000	96,304,000	+5,675,000

Distribution of research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations.....	1,644	\$52,103,000	1,682	\$54,445,000	+38	+\$2,342,000
2. Competing projects.....	781	26,300,000	789	27,732,000	+8	+1,432,000
3. Supplementals.....		2,420,000		2,765,000		+345,000
4. Subtotal, regular program.....	2,425	80,823,000	2,471	84,942,000	+46	+4,119,000
5. General research support grants.....		8,286,000		9,842,000		+1,556,000
6. Scientific evaluation.....		20,000		20,000		0
7. Categorical clinical research centers.....		1,500,000		1,500,000		0
8. Total, research grants.....	2,425	90,629,000	2,471	96,304,000	+46	+5,675,000

Fellowships

	1967 estimate	1968 estimate	Increase or decrease
Fellowships.....	\$6,129,000	\$6,591,000	+\$462,000

INTRODUCTION

In the world of biomedical research today there is an increasing need for the maintenance of high standards of competence and for the enhancement of skills of the established investigator. Additionally, there is a strong need for highly specialized *de novo* training of postdoctoral non-medical investigators whose future lies in "bench" research. The fellowship program is designed to stimulate and support training in specialized fields of biomedical research for Ph. D.'s in the fundamental disciplines and, in selected cases, for M.D.'s at particular sites where appropriate organized training programs do not exist. Fellowships also are used for retraining or updating of established investigators in newly developed or unique investigative techniques. Research Career Development Awards, an advanced form of fellowships, are utilized to support more extended training and development of a limited number of individuals who show outstanding talent and a promise of significant biomedical research contributions.

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PROGRAM PLANS IN 1967 AND 1968

As in the case of the clinical training grants program, the basic problem which this program deals with is the dearth of qualified research investigators and teachers. The main limiting factor to more rapid expansion of the fellowship program is the number of eligible candidates.

The objectives of the Institute's program in this area is to expand the fellowships program so as to meet the growing need for highly qualified specialized manpower in the fundamental biomedical disciplines and clinical research areas.

Distribution of fellowships

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Continuations:						
(a) Noncompeting.....	225	\$3, 513, 000	231	\$3, 619, 000	+6	+\$106, 000
(b) Competing.....	53	555, 000	62	654, 000	+9	+99, 000
2. Supplementals.....	(4)	10, 000	(4)	10, 000	(-)	-----
3. New.....	206	2, 051, 000	215	2, 308, 000	+9	+257, 000
4. Total fellowships.....	484	6, 129, 000	508	6, 591, 000	+24	+462, 000

Fellowships (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Postdoctoral.....	215	\$1, 443, 000	226	\$1, 669, 000	+11	+\$226, 000
2. Special.....	107	1, 215, 000	115	1, 325, 000	+8	+110, 000
3. Research career:						
(a) Career.....	31	817, 000	31	817, 000	-----	-----
(b) Developmental.....	131	2, 654, 000	136	2, 780, 000	+5	+126, 000
4. Total fellowships.....	484	6, 129, 000	508	6, 591, 000	+24	+462, 000

Training grants

	1967 estimate	1968 estimate	Increase or decrease
Training grants.....	\$14, 857, 000	\$15, 706, 000	+\$849, 000

INTRODUCTION

As a result of its responsibilities for the largest number and greatest variety of diseases, this Institute is the principal focus at NIH of support for training in clinical departments of medical schools and centers. The basic problem confronting the Institute and which this program deals with is the inadequate number of independent clinical research investigators and teachers having the necessary competence and scientific sophistication required for effective biomedical research and to engage in research training. The situation applies to the well established fields of research interest, such as arthritis, diabetes and endocrinology, and in even greater degree to emerging or resurgent areas of research interest, such as dermatology, orthopedics, urology and gastroenterology.

PROGRAM PLANS IN 1967 AND 1968

At the present time, the overall training program is confronted with a demand situation unprecedented in scope. For example: about 25 new schools of medicine are being started or will be started in the next few years; in established medical

schools new departments are being created as they respond to the current general broadening of the field of medicine and as they begin to meet the demands for improved teaching and research; and some of the existing schools which in the past did not place emphasis on research but attempted to produce medical practitioners, are now changing this emphasis toward production of more full-time educator-investigators in an effort to upgrade faculties. Thus, despite the success of Institute training programs in increasing the numbers of trained academic investigators in various specialties and disciplines, this added manpower is not only being fully absorbed but is in reality inadequate to meet expanding requirements. Further, the problem is compounded by the inordinate time required for developing qualified research investigators, particularly for the field of clinical investigation.

Immediate and long-range goals emphasize attracting, training and retaining within biomedical research and academic careers able, imaginative clinical researchers and teachers in numbers sufficient to pursue and train for present and anticipated promising research opportunities. The eventual clarification, treatment, management and prevention of disease problems depends on continued, competent investigative pursuit. In response to the long training-time problem, the Institute has established a limited number of *special* experimental programs for training in clinical research investigation in a number of centers where innovations have been underway to explore new training approaches. With experience, the Institute plans to establish more such programs so as to produce clinical research investigators in their early, more imaginative and productive years. Current training grants are distributed among approximately 100 institutions, each having an average of three training grants. Growth in the number of institutions will be governed by (1) growth in the number of medical schools and (2) development of more biomedical research centers. The impact of the growth in the total number of institutions on demand for this type of support already is being felt.

Estimates of probable increases in the number of training grants *within* a single center are subject to greater uncertainties but a conservative judgment predicated on present trends within categorical areas warrants prediction of an increase in the average number of training programs per institution from three to five in the next 10 years. The present Institute plan is based on expectation of an additional 10 institutions competing successfully for this type of support, and an average increase of one additional training grant per institution. Representative of this increase in the past five years has been the introduction of dermatology and orthopedics programs. Increases are expected in the areas of renal disease and urology and liver disease.

The following tables illustrate the estimated support of training by fields:

Distribution of training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Num-ber	Amount	Num-ber	Amount	Num-ber	Amount
1. Continuations:						
(a) Noncompeting.....	253	\$11,961,000	258	\$12,571,000	+5	+\$610,000
(b) Competing.....	50	1,715,000	51	1,845,000	+1	+130,000
2. Supplementals.....	(17)	407,000	(18)	420,000	(+1)	+13,000
3. New.....	27	714,000	29	810,000	+2	+96,000
4. Scientific evaluation.....	(1)	60,000	(1)	60,000	(..)	-----
5. Total training grants.....	330	14,857,000	338	15,706,000	+8	+\$849,000

Training grants (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Graduate.....	330	\$14,797,000	338	\$15,646,000	+8	+\$849,000
2. Scientific evaluation.....	(1)	60,000	(1)	60,000	(...)	-----
3. Total training grants.....	330	14,857,000	338	15,706,000	+8	+849,000

Training grants program analysis

Field	1967 estimate	1968 estimate	Increase or decrease
1. Arthritis.....	\$1,750,000	\$1,857,000	+\$107,000
2. Dermatology.....	1,560,000	1,626,000	+66,000
3. Diabetes.....	705,000	749,000	+44,000
4. Endocrinology.....	1,725,000	1,801,000	+76,000
5. Metabolism.....	2,015,000	2,138,000	+123,000
6. Gastroenterology.....	2,120,000	2,250,000	+130,000
7. Hematology.....	2,040,000	2,165,000	+125,000
8. Nutrition.....	770,000	818,000	+48,000
9. Orthopedics.....	627,000	665,000	+38,000
10. Urology and kidney disease.....	825,000	876,000	+51,000
11. Experimental program.....	660,000	701,000	+41,000
12. Subtotal, training grants.....	14,797,000	15,646,000	+849,000
13. Scientific evaluation.....	60,000	60,000	-----
14. Total training grants.....	14,857,000	15,706,000	+849,000

Laboratory and clinical research

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	531	\$6,045,000	541	\$6,233,000	+10	+\$188,000
Other expenses.....	-----	7,203,000	-----	8,100,000	-----	+897,000
Total.....	531	13,248,000	541	14,333,000	+10	+1,085,000

INTRODUCTION

The intramural research program of the National Institute of Arthritis and Metabolic Diseases is engaged directly in laboratory and clinical investigations and studies into the etiology, diagnosis, treatment and prevention of a broad array of diseases notorious for their chronic nature and long-term disabling effects. Among them are arthritis and related rheumatic and connective tissue diseases, diabetes, cystic fibrosis and other inherited and acquired metabolic disorders, gastroenterological disorders, kidney and urological diseases, endocrine disorders, diseases of the blood and bone, and many others. Research also is conducted in such fields as orthopedic surgery, nutrition and dermatology.

The total program of intramural research also encompasses basic studies in the fundamental services associated with these diseases, such as chemistry, biochemistry, enzymology, molecular biology, anatomy, histology, pathology, physiology, medicinal chemistry, pharmacology, toxicology and genetics. These investigations are predicated in the theory that major progress in solving these health problems cannot be made without specific advances in the fundamental disciplines involved in each disease.

PROGRAM PLANS IN 1967 AND 1968

Arthritis and rheumatism

Institute investigators this past year have conducted numerous clinical and laboratory studies aimed at further clarifying the causative factors involved in these diseases and at improving their diagnosis, prevention, methods of treatment, and management. Because of its crippling and disabling characteristics, considerable emphasis was again placed on the arthritic and related disease states, among them juvenile rheumatoid arthritis, Sjögren's syndrome, gout, rheumatoid arthritis, and Reiter's disease. In the past year numerous findings have been reported by Institute scientists that have shed new light on many of these debilitating disease conditions.

Of particular significance in this area was a study conducted, jointly by Institute and NCI investigators which provides new information about certain cells which at times present problems in the differential diagnosis of rheumatoid arthritis. Their findings described a distinctive multinucleated synovial giant cell in rheumatoid arthritis. These cells were present in the knee joint synovia of nine out of 19 patients with active disease and positive serologic tests for rheumatoid arthritis. None were found in nine seronegative rheumatoid arthritis patients or in a series of control cases. The cells also were observed in joints other than the knee, and they could usually be readily distinguished from multinucleated plasma cells, foreign body giant cells and Touton cells which also occur frequently in rheumatoid arthritis.

Another finding provided important new knowledge about the development of joints. Contractions of the skeletal muscles, it has been suggested, may play a role in joint development during the embryonic stage. Previous studies of this theory, however, had failed to preserve the exact embryonic environment and, thus, the resulting deformities could not be attributed solely to the absence of movement. A study completed in the past year by scientists of the Institute and of National Institute of Child Health and Human Development now has shown that joints do not develop normally in chick embryos that have been paralyzed experimentally. Joint development abnormalities were found in chick embryos paralyzed by three different techniques. Joint cavities failed to develop and became filled with fibrous tissue that ultimately bound the joint elements together, and joint surfaces were flattened and distorted. These findings suggest that embryonic movement is essential for normal joint development, and may have important implications in the study of degenerative joint diseases such as osteoarthritis.

The Institute's very active clinical research program on gout has continued to produce new information about this disease. At the present time, gout can be the best controlled of all the arthritic diseases. Treatment aims at controlling excess uric acid accumulation in the body, and preventing or relieving the recurrent painful attacks. Potent drugs developed during the past decade (uricosuric drugs) are used to rid the body of its excess uric acid via the urine, thus preventing a build-up of harmful crystal deposits. These drugs, notably probenecid and sulfinpyrazone, are the mainstay of long-term maintenance treatment in gout. During the past year, Institute scientists have investigated the use of a newer drug, allopurinol, in gout patients. This drug, which blocks uric acid formation, is being studied in the management of patients who have not responded to other types of therapy.

Recent gout research at the Institute has also centered on the causes of high blood levels of uric acid in this disease, the way in which crystals of monosodium urate produce the inflammation of the acute attack of gouty arthritis, the mechanism for control of purine (the family of compounds of which uric acid is a member) synthesis, and the nature of the association of gout with other disorders such as glycogen storage disease.

In the most crippling of the arthritides, rheumatoid arthritis, the relatively gradual destruction of cartilage, bone, and supporting structures around the joints is ascribed to invasion of the structures by chronic inflammatory granulation tissue (pannus). Institute clinicians have been studying the effects of surgical removal of synovial tissue from the joints to prevent this progressive destruction. An intensive search is also being conducted for a possible causative microorganism in juvenile rheumatoid arthritis, which is characterized by joint inflammation beginning prior to the age of 14, and is accompanied by severe generalized evidence of disease.

Recent intramural studies of Reiter's syndrome have indicated that this disease, which is a triad of arthritis, inflammation of the urethra, and inflammation of the conjunctiva, is related to infection by a specific organism. A clinical study

of pertinent responses related to the blood serum and immune mechanisms in young men with this disease is being conducted.

Sjögren's syndrome is a systemic disease which involves the salivary and tear-producing glands and may be associated with rheumatoid arthritis. Recent studies have revealed abnormal antibodies in the serum of patients with this syndrome, indicating that it may be a disorder of the body's immune system. Patients with Sjögren's syndrome and related disorders are participating in an extensive clinical investigation program at the Institute. Our investigators have observed that patients with apparently benign Sjögren's syndrome at the outset may develop malignant conditions of lymphoid tissue. This disease sequence has offered an opportunity to study the inter-relationship between benign and malignant diseases of the lymphoid and immune system.

Diabetes and other metabolic diseases

Metabolism is an almost boundless research area which is being intensively studied by Institute scientists. Some of the diseases in this area are well known and frequent, while others are relatively rare. Of all the metabolic diseases, diabetes is probably the best known since it affects so many people.

A complex disease for which there is no known cure, diabetes ranks high on the list of fatal diseases. Diabetes research has passed through a recent phase in which significant advances have been made in therapy, notably development of the oral drugs for better blood sugar control of the older diabetic patient. It is now entering a phase in which studies of the more fundamental aspects, specific pathological tissue and molecular changes should lead ultimately to uncovering the cause of the disease.

In the past year, encouraging progress in fundamental and clinical studies of this inherited metabolic disorder has been reported by Institute investigators. For example, Institute scientists have elaborated further on the effect of hormones and other factors on the metabolism of fatty tissue in normal and diabetic animals. Further investigations provide hope to delineate the factors controlling the threshold of insulin action.

Two Institute scientists have recently investigated the role played by growth hormone, adrenocorticotrophic hormone (ACTH), and the adrenal steroid hormones in the induction of diabetes in rats. Their findings indicate that growth hormone and ACTH play equally important roles and that each enhances the effect of the other. The present findings provide a better understanding of the complex hormonal interrelationships in diabetes, an area of research in which new information is accumulating rapidly.

In line with the Institute's research program in diabetes broad intensive and aggressive laboratory and clinical studies are slowly expanding our fundamental knowledge of this complex metabolic disorder and of the normal role of insulin. Bit by bit, new and illuminating information is gradually being shed on the factors which prevent insulin from doing its work efficiently and effectively in the diabetic individual, what roles are individual, what roles are played by other hormones, and what factors are involved in the highly complex process by which glucose is transported from the blood to the interior of body cells.

Another metabolic disease of considerable interest to the Institute is cystic fibrosis, a grave, often fatal hereditary disease of childhood, adolescence, and young adulthood. The basic defect underlying cystic fibrosis is as yet unknown and much of the research carried on by Institute scientists in Bethesda is devoted to discovering the cause of this disorder. They are currently conducting laboratory and clinical studies in an attempt to delineate further the chemical and clinical manifestations of cystic fibrosis and to uncover the fundamental defect responsible for the disease. Trials are also being made to ascertain the best type of treatment for the chronic lung involvement which is the major cause of death. The relationship of this disorder to other types of chronic lung disease and gastrointestinal disorders is also being explored.

Homocystinuria is a relatively rare metabolic disease characterized chiefly by mental retardation. Two years ago several Institute scientists, in collaboration with investigators from the National Institute of Mental Health, determined the basic defect in this disease, the absence or lack of activity of a specific enzyme. The same group of scientists is continuing its studies of homocystinuria and a related disorder, cystathioninuria, in order to further explore the natural course of, and possible therapy for, these disorders.

Institute plans for the immediate future also provide for a specific new direction and expansion of intramural research in other inherited metabolic diseases via a program titled Chemical Physics that will emphasize studies affecting cellular metabolism, protein synthesis and enzyme action and regulation.

Endocrinology

The field of endocrinology encompasses an extremely wide spectrum of research problems, involving the internally secreting glands, such as the pituitary, thyroid and adrenal glands, and their respective roles in the physiology of the human body. To understand any disease process of physiologic disorder it is essential to consider the possible etiologic role of hormones secreted by these glands and the factors which regulate their synthesis, release and degradation. Institute research is pursuing intensively the isolation, purification, characterization and synthesis of hormones. Recent technical advances in biomedical research should aid immensely in elucidating the remaining unidentified factors.

One of the major roles of the pituitary gland hormones is to modify or regulate the size and functional activity of other glands or tissues, which in turn control the overall metabolic state of the individual. Certain metabolic abnormalities are corrected and some tumors beneficially affected by treatment with hormones or by removal of endocrine glands. Basic knowledge of the chemistry and physiology of pituitary protein hormones is limited.

Elucidation of the differences in structure of the pure hormone of different species will lead to a better understanding of the differences in biological activity and in antigenicity of a given hormone. This will shed light on the effects of excesses and deficiencies of these pituitary hormones, as well as allow for possible synthesis of hormones for therapeutic application.

Using pituitary glands of man and animals, Institute scientists are presently attempting to purify hormone preparations to develop and use sensitive qualitative and quantitative tests for estimation of their potency.

Studies are currently underway on patients with gigantism, or abnormal overgrowth, including specific assays for plasma growth hormone. Conversely, therapy with human growth hormone can dramatically increase the height and weight of pituitary dwarfs and more than double the growth rate in many instances. However, there is a severe shortage of human pituitaries collected for scientific purposes. Investigations underway are aimed at the possibility of modifying animal (bovine) growth hormone to make it effective in humans. Patients with tumors who appear to have excessive secretion of growth hormone, ACTH, TSH, vasopressin, or insulin are also under study.

A research finding of major significance in the field of endocrinology resulted from a study conducted by an Institute scientist of a Marshall Island population many years after it has been accidentally exposed to radioactive fallout in 1954. Pathologic changes were found in the thyroid gland in a number of the Marshallese, indicating that the seriousness of the internal hazard associated with fallout, particularly from radioiodine, must be revised upward and must be regarded as a major long-term hazard. The high incidence of thyroid abnormalities also emphasizes the caution with which radiation must be used clinically, particularly with children.

In another important study, an Institute scientist has found evidence of gonadotropin production by certain anaplastic large-cell carcinomas of the lung. Production of gonadotropins (a sex gland stimulating hormones), which normally is restricted to the pituitary gland and placenta, is ordinarily associated with endocrine tumors. This work describes the first documented instance of gonadotropic activity of non-endocrine tumors, specifically carcinomas of the lung.

The study involved four male smokers with breast enlargement (gynecomastia) and cancer and ten patients with cancer and no breast enlargement. Blood and urine as well as pituitary and lung tissue was examined for gonadotropic activity. Results of the study indicate that the source of gonadotropic activity in urine and blood of these patients was cancer of the lung. It is now clear that breast enlargement in an adult smoker demands careful evaluation and observation for carcinoma of the lung.

Another endocrine study is in progress on the nature of the hypothalamic-pituitary defect in the syndrome of hypogonadism (retardation of sexual development), due to deficiency of pituitary gonadotropin, but with normal growth, thyroid function and adrenal function are also under careful endocrine and neurologic evaluation.

In the area of thyroid diseases, investigative studies are being conducted on patients with various types of goiter and thyroid nodules, abnormalities in thyroid hormones synthesis, goitrous hypothyroidism and hyperthyroidism. These various studies are providing additional information on the little understood workings and secretions of the endocrine system.

Kidney disease

Diseases of the kidney and urinary tract also are of primary concern to the Institute. This past year, Institute scientists have reported numerous findings providing new insights into several diseases involving the kidneys. Of particular importance among these is cystinuria, a disease attributed to a hereditary defect in the ability to transport certain substances through the cells of renal tubules. It is characterized by urinary excretion of large amounts of the amino acids cystine, lysine, arginine and ornithine, and by the formation of cystine stones in the urinary tract. It has been suggested, however, that the disorder is due to more than one single inherited disease process. This past year, Institute investigators have obtained evidence of an intestinal, as well as a renal transport defect in this disorder. Their findings indicate that cystinuria encompasses at least three biochemically and genetically distinct defects.

In other investigations in this area, Institute scientists have found in clinical studies that allopurinol, a drug used in the treatment of gout, has potential use in patients with hyperuricemia (an excess of uric acid in the blood but not associated with gout) and renal insufficiency (a condition in which the kidneys are unable to remove a sufficient proportion of metabolic waste products). Intensive, continuing investigations also are being pursued by Institute researchers seeking to clarify the involvement of the kidneys in systemic lupus erythematosus (SLE), a grave inflammatory connective tissue disorder. The nature and severity of kidney involvement varies widely but when severe it is a common cause of death in this disorder.

Hematology

Diseases of the blood constitute a major public health problem and strike a considerable number of Americans. A detailed understanding of the blood and the many factors that affect it is an essential and invaluable requirement in the fight against blood disorders. Laboratory and clinical studies by Institute investigators this past year have made important contributions in furthering understanding of such blood diseases as hemophilia, purpura, the anemias, and many others.

Of particular importance to victims of hemophilia was the finding of an Institute scientist, in collaboration with an investigator in the National Institute of Dental Research, demonstrating that infusion of human anti-hemophilic globulin concentrate (AHG) is the best treatment available for hemophilic patients undergoing oral surgery who otherwise would run the risk of uncontrolled, life threatening hemorrhage. The investigators currently are evaluating less costly but equally effective plasma fractions for hemophilia therapy. Their findings may also prove to have application in the treatment of other blood disorders in which hemorrhaging is a factor.

Meanwhile, continuing studies are being conducted by Institute investigators on the biochemistry of blood coagulation with particular reference to the development of better forms of therapy for various congenital and acquired hemorrhagic diseases. New approaches are being evaluated by Institute scientists to treatment of acute and chronic idiopathic thrombocytopenic purpura, a disease characterized by easy bruising and bleeding, and related conditions. Investigations also are being conducted in connection with the immunological aspects of various cytopenic states (conditions in which there are deficiencies in the cellular elements of the blood), which involve clinical studies of patients with thrombocytopenia, anemia or granulocytopenia caused by drug sensitivity.

The requested increase will provide for 5 positions and \$78,000 for clinical investigations; 3 positions and \$64,000 for additional efforts and support in chemical biology and physics; 2 positions and \$23,000 for required assistance in scientific report writing; \$195,000 for alterations and equipping of additional space to be provided through relocation of the NIH library; \$67,000 for additional electronic computer services; \$145,000 for selective strengthening of other developing programs through provision of required equipment, instrumentation, and supporting contractual services; \$25,000 for annualization of positions new in 1967 offset by one less day of pay in 1968; and \$479,000 for centrally furnished services from the National Institutes of Health management fund.

Collaborative research and development

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	25	\$263,000	26	\$279,000	+1	+\$16,000
Other expenses.....		4,861,000		7,457,000		+2,596,000
Total.....	25	5,124,000	26	7,736,000	+1	+2,612,000

INTRODUCTION

This activity deals primarily with problems requiring the utilization of extra-Institute talent, resources, or facilities, usually through the contract mechanism, and often on a collaborative basis with other contractors and Institute personnel. The nature of research efforts so conducted are usually of a highly planned, specified-result, or developmental nature, but can also be fundamental if such work cannot be accomplished within the Institute's intramural research program. Another function of this activity is that of scientific communications including the publication of current-awareness journals and indexes, films, and other media of communications.

PROGRAM PLANS IN 1967 AND 1968

Current collaborative activities being pursued by this Institute include the following:

Artificial Kidney and Hemodialysis

Each year about 3,600 patients die of uremia, the end stage of kidney failure, who would be suitable for perpetual maintenance treatment with the aid of an artificial kidney. This unique and novel type of treatment has only become available in recent years after it had been developed largely with the support of research grants from this Institute. In order to make this life-saving but highly expensive and complicated treatment available to as many patients as possible, this Institute initiated in 1966 a directed, mission oriented and planned program of research and development in the artificial kidney field utilizing predominantly a direct contract approach. The artificial kidney program is aimed at obtaining via the shortest possible route a lowering of cost, and improvement in the effectiveness of artificial kidneys and related methods of dialysis, and improved rehabilitation of patients with end stage kidney failure.

Artificial kidneys are mechanical devices that can be used to cleanse the blood when the natural kidneys fail. Until permanently functioning transplantation of healthy kidneys from living or dead donors becomes a practical reality, blood purification through repeated use of an artificial kidney (chronic hemodialysis) is the only hope for survival for such patients.

While some patients in chronic kidney failure are being kept alive and productive through repeated treatment with the devices currently in use, most candidates for such treatment are unable to receive these benefits because of the cost and complexity of treatments.

Although artificial kidneys have been used for about two decades in cases of poisoning or acute kidney failure, their use on any one patient has been limited. Each time a patient required such a blood purifying apparatus, it was necessary to insert tubes into a major vein and artery to conduct blood from the patient through the artificial kidney and back into the patient's circulation. Each tube insertion often facilitated the onset of dangerous infections, and involved a new surgical procedure on a new pair of major blood vessels; thus, the number of times any one patient could be connected to an artificial kidney was limited. About five years ago, an Institute grantee developed use of permanently implanted, connected plastic tubes in an artery and vein of the forearm. The indwelling "shunt" makes it possible to connect a patient repeatedly to artificial kidneys without special surgical procedures and without the use and ultimate sacrifice of a new set of blood vessels with each dialysis. Development of this shunt started a new era of hemodialysis in patients with permanently impaired kidney function.

During the last few years it has been shown that the repeated routine use of artificial kidneys in such patients on a regular schedule would permit the saving of lives. Nevertheless, artificial kidney patients maintained with the aid of artificial kidneys still display a number of undesirable symptoms which may be related either to the basic chronic disease or to the treatment. Even so, using currently available techniques, the cost of hemodialysis both in terms of money and qualified manpower is extremely high. Moreover, authorities representing artificial kidney centers agree that improvements in hemodialysis must be based on additional knowledge of the nature of uremia. Such knowledge is as yet imperfect and must be developed side-by-side with effects to improve artificial kidney apparatus and techniques.

It was considered important to obtain for the Institute's Artificial Kidney Program, the best possible consultative talent from both outside and within the National Institutes of Health. Accordingly 23 outstanding authorities active in the field of chronic uremia and hemodialysis have been appointed as consultants. Among them are physicians who have led programs in artificial kidney centers, renal physiologists, physical chemists and membrane specialists, chemical and electronic engineers, and those rare, talented individuals who combine several of the above qualifications. These consultants are assisting in setting the trend of the program and are reviewing the scientific merit and feasibility of contract proposals.

A thorough study of the state of the art made it apparent that no single specific direction could be followed at present, which would exclude others which might be relevant. Several different types of artificial kidneys are in use at the moment, and different methodologies are being advocated by the various workers in the field. Therefore, at this time, a variety of approaches in artificial kidney development is being supported. Once it becomes evident that one or more approaches show greater promise, efforts will be concentrated in these directions.

The following are outstanding problems in dialysis and activities of highest priority toward which the new Artificial Kidney Program is directing immediate efforts:

1. Improvement of cannula materials, design and techniques so that current clotting and infection problems will be minimized. This involves redesign of cannula tips and bodies, development of a safer and simpler cannula coupling to the artificial kidney conduits, and the use of different cannula materials, including plastics permanently coated with anti-coagulants.

2. Development of improved or different membranes to permit a more selective and briefer dialysis. This involves the development and evaluation of tailor-made polymer membranes with controlled pore size and/or selective electrostatic properties, as well as mechanical modifications of the currently used cellulose sheeting and introduction of non-coagulating surface properties.

3. More efficient, less cumbersome and less costly dialyzer design. This involves the development of new disposable dialysis-ultrafiltration units, development of more compact dialyzers requiring less blood for priming, overall redesign of machines to simplify and shorten assembly and sterilization, introduction to artificial kidney design of plastic materials with non-coagulating surfaces, and expansion of two new concepts in artificial kidney dialysis; (a) "hollow fiber" kidneys, and (b) "diafiltration"—blood purification primarily through ultrafiltration, followed by artificial reconstitution of the filtrable blood solutes.

4. Improvement of operating efficiency and safety of large hospital dialysis centers and of home dialysis units. In hospital centers, this involves development of improved automatic central fluid delivery systems, and fail-safe monitoring systems for all aspects of dialysis (blood leakage, temperature, ionic concentrations of fluid). In home dialysis units, this involves inclusion of a fail-safe mechanism in event of accidental blood leakage—to permit unattended dialysis at night when patient and family are asleep.

5. High requirement for professional personnel. This requirement is based on the medical nature of dialysis, but aggravated by problems 1, 2, and 3 above.

6. Lack of effectiveness data. No objective information has been obtained through well-controlled studies which permits a meaningful evaluation of the comparative effectiveness of the various dialysis methods and equipment currently in use.

7. Undesirable symptoms frequently found in patients maintained by repeated dialysis:

- (a) Anemia. On the average, one or more blood transfusions are needed per month per patient maintained in dialysis—with the attendant high risk of transfusion hepatitis.

(b) Peripheral neurological damage. This may be due to long-term effects of the semi-uremic state in surviving patients on repeated dialysis, or due to the dialysis procedure, *per se*.

(c) Pseudo-gout, secondary hyperparathyroidism, skeletal demineralization, and calcium deposition in joints and in the tissues throughout the body. The most recent findings involve calcium deposition in the cornea of the eye. Simultaneously, there is a tendency to decalcification of bone with resultant fractures produced by minor stresses.

8. A systems analysis of the entire present chronic dialysis effort and of its methodologies and equipment. This includes a comparative evaluation of the various facets involved in chronic dialysis, from selection of the patient through his medical evaluation once he is being maintained with chronic dialysis. This includes a registry of all patients presently maintained with the aid of artificial kidneys or peritoneal dialysis. This overall systems analysis will continue as a longitudinal study of these patients and will be undertaken as a cooperative effort with the community service programs in dialysis of the National Center for Chronic Disease Control, PHS; it will cover the various dialysis centers of the Veterans Administration Hospitals and all other centers or hospitals engaged in chronic dialysis and willing to cooperate.

Problems 1 through 4 are primarily responsible for the current high cost of dialysis, which averages \$10,000-\$14,000 per year in patients maintained by hospital dialysis on a twice-weekly schedule.

The Artificial Kidney-Chronic Uremia Program was mounted in record time with the activation of 24 carefully selected research and development contracts. These contracts were placed with universities, nonprofit research laboratories and industrial concerns, and constitute a broad spectrum approach to the major problems. These projects involve most of the developmental areas mentioned previously.

The portion of the program which is funded by extramural research grants complements closely the contract program described above, but is oriented more toward elucidation of clinical and fundamental biological problems related to the treatment of chronic uremia rather than toward hardware development.

The Institute convened an all-day workshop last November, attended by 27 researchers in the field, on standardization of hemodialysis membrane test methods which was instrumental in clarifying artificial kidney membrane development goals and in defining requirements of standardized tests and testing equipment. Several models of new equipment to test hemodialysis membranes were displayed during the workshop, two of which showed particular promise and were recommended for evaluation by third-party investigators.

Institute planning also is underway for a workshop on another phase of research in this area, the use of a special diet to decrease the need for intensified chronic dialysis.

Periodic optimistic stories in the lay press notwithstanding, the ultimate cheap, simple, efficient and safe artificial kidney for home use does not yet exist, nor does it loom in the immediate future. The program as outlined here is expected to close existing gaps systematically and to deal with treatment complications. Simultaneously, it introduces new engineering developments into the maintenance treatment of uremic patients and is expected to lead toward both better hardware and improved patient rehabilitation.

Scientific communications

In today's complex world of science, the individual research scientist and physician face an almost insurmountable situation in keeping abreast of current advances described in the scientific literature published in his particular field of work. Aware of this need and of the existing communications gap, the Institute has sought to meet this challenge in its areas of responsibility by initiating a program of concise monthly current-awareness publications which make available to the scientist bibliographies and abstracts of all current scientific literature and papers most relevant to his special field of interest.

The first three such current awareness publications have successfully met this challenge and have been most enthusiastically received by the scientific community. These are: *Arthritis and Rheumatic Diseases Abstracts*, now in its second year of publication; *Diabetes Literature Index*, approaching its second year; and *Gastroenterology Abstracts and Citations*, completing its first year of publication. Their success and acceptance by the scientific community amply bears out the need for publications of this type.

At present, the Institute is starting publication of a new quarterly bibliography on chronic kidney failure, artificial kidneys, and dialysis methods as a useful current-awareness tool for facilitating better communication and greater endocrinology and nutrition. The Institute also is contemplating support of an

Institute planning currently is well underway in the development of several other current-awareness journals to fill existing scientific needs in the fields of endocrinology and nutrition. The Institute also is contemplating support of an annotated bibliography in cystic fibrosis, to be published by the National Cystic Fibrosis Research Foundation. In collaboration with the Foundation, the Institute has undertaken the production of a film on diagnosis and treatment of cystic fibrosis intended for widespread education of medical students, hospital staffs and practicing physicians.

National Pituitary Agency

The National Pituitary Agency has been established by the Institute for the collection of human pituitary glands and for the extraction and distribution of human growth hormone (HGH) for research and clinical studies by qualified investigators.

Human growth hormone, available only from human pituitary glands at the present time, functions primarily to regulate body growth processes. The demand for this hormone currently far exceeds the supply. It has been used effectively in treating hypopituitary dwarfism, and now clinical trials are being made in a variety of related disorders of delayed growth. Other research endeavors currently are seeking to derive a human growth stimulating function from bovine growth hormone through chemical modification. Still others are seeking to synthesize HGH in the laboratory. Until it is synthesized, however, treatment on a large scale for hypopituitary dwarfism will not be possible.

In an effort to deal with this problem, the Institute is continuing its program of collection of pituitary glands from human cadavers and the systematic isolation and purification of pituitary gland hormones from this material, including HGH, through the National Pituitary Agency at Johns Hopkins Hospital in Baltimore. Through this agency investigators throughout the country are receiving the hormone for clinical trials and further research. An indication of the severity of the problem is illustrated by the fact that a single human pituitary gland yields only 3-5 mg of human growth hormone, sufficient for less than one week's experimental treatment of a hypopituitary or dwarfed child.

The requested increase will provide 1 position and \$2,500,000 for continued development of the Artificial Kidney-Chronic Uremia program; \$97,000 for additional current-awareness publications in the scientific communications program; \$4,000 for annualization of positions new in 1967 offset by one less day of pay in 1968; and \$4,000 for centrally furnished services from the National Institutes of Health management fund.

Biometry, epidemiology, and field studies

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits	26	\$168, 000	28	\$186, 000	+2	+\$18, 000
Other expenses		562, 000		565, 000		+3, 000
Total	26	730, 000	28	751, 000	+2	+21, 000

INTRODUCTION

In the continued search for new scientific knowledge, Institute scientists and clinicians are carrying out extensive field studies both of an epidemiological and clinical nature. These include studies of iodine metabolism, of the natural history of arthritis and rheumatism in American Indians, epidemiological and clinical studies of diabetes in certain American Indian tribes, and studies of gallbladder disease in selected American Indian tribes. The major portions of the population and clinical studies on arthritis and rheumatism, diabetes and gallbladder disease are carried out by the Institute's Clinical Field Studies Unit based in Phoenix, Arizona with a clinical component on the Gila River (Pima) Indian Reservation.

This latter facility, a complete and portable structure connected to a wing of the Division of Indian Health hospital at Sacaton, Arizona, provides necessary laboratory and examination facilities for more intensive studies in these areas.

PROGRAM PLANS FOR 1967 AND 1968

Current objectives of the field projects of iodine metabolism include studies to determine the environmental factors that are associated with the prevalence of goiter and to examine more closely the nature of the metabolic defect responsible for the disease. Field studies carried out in two states have revealed that non-goitrous subjects appeared to be in negative iodine balance, i.e., iodine excretion exceeded iodine intake, whereas goitrous subjects appeared to be in positive iodine balance. A serious handicap to goiter investigators has been the lack of a reproducible method of estimating thyroid size. A satisfactory technique has been developed and validated and will be used in future studies which will be directed to verification of the relationship of goiter to water supply and to clinical and laboratory studies designed to identify the specific metabolic defect underlying goitrous conditions.

Thyroid studies on selected populations in Nevada and Arizona relating to the effects of radioactive substances in air, water and food will be continued.

Our field studies unit has found that the Pima Indians have the highest prevalence of diabetes ever recorded in a circumscribed population group—about 15 times the rate among the U.S. population as a whole. Population studies, such as this, provide dependable new data, and since the disease is in part hereditary such studies can be accomplished more effectively among a stable, comparatively isolated group in which the forces of heredity may be observed more clearly than in a mobile population. Continuing studies among the Pimas in the past year by Institute scientists have now revealed that the effects of child bearing do not account for the higher prevalence of diabetes among women. Since the Pimas have large families in addition to a high prevalence of diabetes, data obtained was analyzed to test the hypotheses that increasing parity is associated with an increased risk of diabetes. These findings contradict findings of previous clinic studies by other investigators (in England) which lent support to a hypothesis that pregnancy precipitates frank diabetes in women genetically predisposed to the disorder. These studies will be continued and strengthened in order to evaluate the development and course of diabetes in this population. Studies will include diabetics, prediabetics and individuals who will not develop diabetes. Clinical studies will also be initiated to investigate the possibility of preventing or ameliorating the complications of the disease.

Included in the arthritis and rheumatism clinical field projects are studies to evaluate the development and progression of various forms of these conditions with particular emphasis on rheumatoid arthritis, ankylosing spondylitis and osteoarthritis in the Pima Indians over a ten-year period; to investigate and evaluate various associated conditions and factors, including heredity, that may have a bearing on the frequency, severity and prognosis of arthritis and rheumatism in this population; and to contrast certain selected findings in the Pima Indian population with similar studies performed on other populations with different characteristics or environment.

The program increase of 2 positions and \$9,000 will provide support for continuing these studies. Of the net increase requested, \$6,000 is for annualization of positions new in 1967 and \$6,000 is for centrally furnished services from the National Institutes of Health management fund.

Review and approval of grants

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	79	\$678,000	81	\$703,000	+2	+\$25,000
Other expenses.....		1,246,000		1,454,000		+208,000
Total.....	79	1,924,000	81	2,157,000	+2	+233,000

INTRODUCTION

This activity is composed of professional and supporting personnel who are responsible for the administration of the Institute's several grants activities. This involves planning and development of programs in research, training, and fellowships that will best serve to accomplish the desired results in the areas of disease interest for which this Institute is responsible; review and evaluation of research and training grant applications for presentation to the National Advisory Arthritis Council; required Council staff assistance; liaison with applicants, grantees, other components of NIH and PHS, advisory bodies, and interested organizations, continuous surveillance of scientific activities and progress; and recording and reporting of fiscal and scientific information relevant to all transactions.

Due to sharply increasing costs in the conduct of biomedical research, competition for support of research proposals is far greater than has been experienced during the past several years. The average investment is high with a near corresponding decrease in numbers that can be funded. For this reason an increasing burden of awareness and of programs needs and continuing analyses in depth is required of the personnel engaged in this activity. Appraisals, and resultant advice, of required or desired investments to achieve or maintain program balance and most effective pursuit of research opportunities must be both timely and most professional.

The increase requested for this activity will provide two positions and \$52,000 for their support and for increased electronic data processing costs; \$4,000 for annualization of one new position in 1967; and \$179,000 for centrally furnished services from the National Institutes of Health management fund. These increases are partially offset by a decrease of \$2,000 for one less day of pay in 1968.

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	22	\$211,000	25	\$248,000	+3	+\$37,000
Other expenses.....		119,000		128,000		+9,000
Total.....	22	330,000	25	376,000	+3	+46,000

INTRODUCTION

This activity is comprised of the Institute Director, his immediate staff, and administrative management and service personnel. Responsibility lies herein for the general direction, coordination and administration of the total Institute activities.

The requested increase will provide three positions and \$28,000 for required strengthening of management staff and for program analysis assistance, particularly with reference to in-depth studies relating to the programming and budgeting systems in the Institute. The request also includes \$5,000 for annualization of one new position authorized in 1967, partially offset by a decrease of \$1,000 for one less day of pay in 1968, and \$14,000 for centrally furnished services from the National Institutes of Health management fund.

New positions requested in 1968

	Grade	Annual salary
Research:		
Scientist (3).....	GS-16	\$60,225
Science writer.....	GS-9	8,479
Do.....	GS-7	7,729
Research technician.....	GS-7	6,451
Secretary.....	GS-5	5,331
Clerk-stenographer.....	GS-3	4,269
Director grade.....	CO	19,261
Surgeon grade.....	CO	10,749
Collaborative research and development; Senior grade.....	CO	12,415
Biometry, epidemiology, and field studies:		
Scientist.....	GS-11	9,536
Research technician.....	GS-5	6,387
Review and approval:		
Scientist.....	GS-13	12,873
Secretary.....	GS-6	5,867
Program direction:		
Senior medical officer.....	GS-17	22,760
Program analyst.....	GS-7	6,451
Clerk-stenographer.....	GS-4	4,776
Total, new positions, all activities (18).....		203,559

CHRONIC AND LONG-TERM DISABLING DISEASES

Senator HILL. Now we will hear from Dr. Whedon, arthritis and metabolic diseases.

You certainly have a lot of people in the United States looking to you, Doctor.

Doctor, you may proceed.

Dr. WHEDON. Mr. Chairman and members of the committee, I am grateful once again for the opportunity to report to you on the programs of the National Institute of Arthritis and Metabolic Diseases and to testify to the progress and needs of these programs for the next fiscal year.

The National Institute of Arthritis and Metabolic Diseases bears responsibility for a broad array of diseases characterized by their chronicity and long-term disabling effects rather than mortality: various arthritic diseases and related rheumatic and connective tissue disorders, diabetes, and other inherited errors of metabolism, diseases of the gastrointestinal tract including diseases of the liver and gall-bladder, endocrine disorders, diseases of the blood and bone, urological and kidney diseases, and such fields as orthopedic surgery, dermatology, and nutrition.

FUNDAMENTAL SCIENCES RESEARCH

The total program necessarily includes studies of a fundamental nature as they are associated with the specific disease objectives described above. Thus the Institute has an important stake in the pursuit of support of research in fundamental sciences which constitute the foundation of knowledge pertinent to any of the above disease categories; chemistry, biochemistry, enzymology, molecular biology, anatomy, histology, pathology, physiology, medicinal chemistry, pharmacology, toxicology, and genetics.

The Institute's efforts in support of fundamental research are conditioned by the type of diseases within its sphere of interest, and are based on the hardheaded realization that no major progress in solving these health problems results without specific advances in the fundamental disciplines deeply involved with each disease. The history of medicine and of biomedical research and our own experience has taught us that major breakthroughs in the treatment and control of a disease usually depend on pertinent advances in fundamental knowledge applicable to the disorder, and that pursuit of a disease problem along purely clinical or applied lines sooner or later reaches a point of rapidly decreasing return because of serious limitations in fundamental knowledge and techniques.

CLINICAL STUDIES, FUNDAMENTAL INVESTIGATIONS, AND DEVELOPMENT RESEARCH FUNDING RATIONALE

The Institute, therefore, endeavors to maintain a rational balance in the allocation of its funds and efforts among clinical studies, fundamental investigations and, where the opportunity is ripe for exploitation, specifically directed, planned developmental research. In my testimony today I would like to touch upon activities and achievements along all of these lines, none of which can be looked upon as distinct and exclusive methods of approach to the solution of the health problems of the Nation.

PROGRESS REPORTS

Although many significant contributions have been made by Institute and Institute-supported scientists, in this brief report I can mention only a few examples of the heartening progress made since last year. With the permission of this committee, I would like to submit separate, more detailed special reports dealing with specific achievements and progress brought about by Institute scientists or grantees in the areas of arthritis and rheumatic diseases, diabetes, gastrointestinal diseases, and cystic fibrosis.

Senator HILL. We will be glad to have those special reports, Doctor. We will put them in the record following your statement here this morning.

Dr. WHEDON. I would also like to append a comprehensive progress report on research in the field of kidney diseases for which the prime responsibility lies with this Institute, but in which other specialized aspects are pursued through coordinated efforts in two other institutes as well.

Senator HILL. We will be glad to have it appear in the record, too.

ARTHRITIS

Dr. WHEDON. The main thrust of present studies in arthritis is directed against the most crippling of the arthritic disorders, rheumatoid arthritis, where new etiologic possibilities have been uncovered recently. Two types of micro-organisms that have been implicated in recent reports in joint diseases in animals are now being studied in relation to the rheumatic diseases. The possible role of mycoplasmas—micro-organisms with characteristics between bacteria and viruses—in causing rheumatoid arthritis is now being investigated, as well as the possible causative role of viruses belonging to the genus Bedsonia.

This last year, investigators have produced arthritis in monkeys by injecting them with Bedsonia organisms isolated from human patients with Reiter's syndrome, a disease closely related to rheumatoid arthritis. Another group of investigators has reported a study which offers hope for an effective form of therapy in rheumatoid arthritis, and possibly, in other diseases caused by faulty immune mechanisms—autoimmunity. They produced adjuvant arthritis, an experimentally induced form of arthritis affecting many joints and exhibiting a true, but transitory, immunologic reaction, in rats by injecting them with Freund's adjuvant, a material used in many immunity studies. Treatment of these rats with rabbit antilymphocyte serum successfully suppressed the usual arthritic reaction in these rats; in contrast, untreated control animals all developed marked polyarthritis. This important research lead is being followed with additional studies to determine its possible applicability to treatment of human arthritis.

OSTEOARTHRITIS AND RHEUMATOID ARTHRITIS TREATMENTS

Based on their studies on osteoarthritis, degenerative arthritis, investigators supported by this Institute have reported on the likely clinical value of a special cartilage-bone marrow extract preparation in the treatment of this disorder. At the same time, other investigators have reported favorable results obtained in the treatment of rheumatoid arthritis with cyclophosphamide, a cytotoxic drug originally developed as an anticancer agent. Both studies represent early work on potentially important advances and thus warrant further investigation and continued clinical trials in order to elucidate the respective mechanisms of action, precise limits of effectiveness of the treatment, and the extent of side effects during prolonged treatment, if any.

TREATMENT OF GOUT WITH ALLOPURINOL

Last year I reported to the committee encouraging experiments with a new drug, allopurinol, which is capable of depressing uric acid formation in patients with gout. In this inherited metabolic disorder, uric acid crystals are deposited in and around the joints, and in other tissues, resulting in inflammation, severe pain, and eventual destruction of normal joint structure. In severe cases, permanent crippling or severe kidney damage, or both, may result. Continued experience with the new drug has, indeed, justified our optimism as to its efficacy in the treatment of this disease. At the present time, gout can be the best controlled of all the arthritic diseases.

Current treatment, much of which has evolved under Institute sponsorship, aims at controlling excess uric acid accumulation in the body and at preventing or relieving the recurrent painful attacks. Potent drugs developed during the last few years can now be used to suppress abnormal uric acid synthesis or to stimulate its excretion via the urine, thus preventing a buildup of harmful crystal deposits in the joints, in the urinary tract, and in other tissues.

Senator HILL. That is real progress, is it not?

Dr. WHEDON. Yes, it is. We are very pleased with the progress made, particularly in gout, and this drug I reported to you last year, allopurinol, seems to be proving out very well.

DEVELOPMENT OF METHODS OF EARLY DETECTION

At this point our future research emphasis in gout will be on development of methods of early diagnosis of this inherited metabolic disorder to permit prompt treatment and consequent avoidance of joint damage and kidney complications.

DIABETES

In diabetes research, we have passed through a recent phase in which significant advances have been made in therapy, notably development of the oral drugs for better blood sugar control in the older diabetic patient. Now we are beginning to enter a phase in which we are approaching more fundamental aspects, specific pathological tissue, and molecular changes which should lead us closer to the cause of the disease.

JUVENILE (BRITTLE) DIABETES AND MATURITY-ONSET (STABLE) DIABETES

In previous testimony before this committee I have distinguished between two clinical types of diabetes—juvenile diabetes—“brittle” diabetes—and maturity-onset diabetes—“stable” diabetes—which have different prognoses, somewhat different treatment, and related, but possibly dissimilar, causative mechanisms. The onset of the “brittle” type of diabetes frequently occurs during childhood or the teens. Although the great majority of such patients can be maintained with regular insulin injections, life expectancy of the patient with this type of diabetes is considerably shortened.

POSSIBLE RELATION OF INSULIN MOLECULE STRUCTURAL ABNORMALITY AND JUVENILE DIABETES

It has recently been proposed that inheritance and development of diabetes may be related to a natural insulin made by the patient's pancreas with an abnormal molecular structure. This concept has gained support during the past year from the work of an Institute-supported investigator who has shown that insulin isolated from the blood of diabetic children is resistant to destruction by a specific enzyme capable of degrading insulin from normal individuals. This resistance of juvenile diabetes insulin to the enzyme may be the result of a structural abnormality in this insulin molecule. This finding suggests that there is a genetically determined difference in the insulin in juvenile diabetes which contributes significantly to the underlying biochemical disorders of the disease.

MATURITY-ONSET DIABETES RESEARCH WITH EGYPTIAN SAND RAT

In previous testimony I have mentioned the finding that the Egyptian sand rat has been discovered to be a suitable experimental animal model for diabetes resembling the human maturity-onset type of the disorder. This development of the recent past is expected to aid greatly in diabetes-related research by providing a system for observing more closely the altered body chemistry of diabetes and a means of testing the effects thereon of treatment possibilities. I am now pleased to follow up my previous testimony with the report from Institute-sup-

ported investigators who have recently described a metabolic disorder closely resembling human juvenile diabetes which has appeared as a new genetic mutation in inbred mice. Because the disease is readily reproducible, the new strain of mice provide a much needed experimental animal model for research on juvenile diabetes.

Senator HILL. That will be quite an advance, will it not?

Dr. WHEDON. Yes, it will be extremely helpful in fact. The idea of finding suitable animal models is one of the efforts that is made throughout medical research in an effort to learn more about not only the course of a disease but its underlying causes, its underlying metabolic and biochemical abnormalities.

It has been generally accepted that abnormal carbohydrate metabolism is the initial manifestation of clinical diabetes and that the small blood vessel abnormalities of the disorder which are responsible for some of its severe complications develop only subsequently, as the disease progresses. Institute grantees have recently reported a very significant finding in prediabetic individuals—persons having two diabetic parents and genetically destined to develop diabetes some time during their lives, but who do not display as yet any chemical aberrations of the disease. These investigators were able to demonstrate that significant small blood vessel disease in muscles, expressed in the form of marked thickening of the basement membrane of capillaries, which is characteristic of overt diabetes, appears in at least 50 percent of genetically prediabetic subjects prior to the onset of carbohydrate abnormalities and in practically all diabetic patients thereafter. These findings suggest that small blood vessel basement membrane thickening may represent the primary lesion of diabetes, followed only secondarily by carbohydrate derangements. The significance of this observation is that diabetes investigators are now afforded a new angle of attack, a direction for research efforts which may be much more fruitful in determining the fundamental cause of diabetes than previous studies directed mainly toward the abnormality in carbohydrate metabolism.

GASTROENTEROLOGY

Institute acceleration in studies of peptic ulcer is beginning to bear significant results against this disorder which strikes about 10 percent of all adults in the United States at some time or other in their lives. I am pleased to report that the studies of one Institute grantee have now demonstrated the efficacy of a new compound, amylopectin sulfate, in the treatment of patients with chronic duodenal ulcer disease and in the prevention of recurrences of such ulcers. This substance does not appear to exert an antacid or anticholinergic action in the manner of currently used antipeptic ulcer agents but, according to the investigator, exhibits a direct inhibitory effect on secretion of acid and pepsin by the stomach mucosa.

Senator HILL. That is real progress, is it not?

Dr. WHEDON. Yes, this is definitely a new line. This should be much more effective than the current types of antacid treatment that are being followed.

Other achievements in the area of gastroenterology include a new treatment for malabsorption in intestinal scleroderma, a new diagnostic technique to detect patients with ulcerogenic tumors of the pancreas,

the successful use of exchange transfusions in moribund patients with hepatitis, and many others. The Institute intends to increase its efforts to develop new methods of overcoming acute liver failure, a condition heretofore not amenable to effective therapy. Experience gained in the Institute's artificial kidney program is expected to find application in evolving methodology for management of liver failure.

KIDNEY DISEASE

ARTIFICIAL KIDNEY DEVELOPMENT

Although this report by necessity is brief, I must mention progress in artificial kidney development in which the Institute has launched an energetic planned program of research and development in which this committee has shown particular interest. Here a group of Institute-supported investigators have developed a new artificial kidney which is considerably smaller and more efficient than existing types. The new device costs half as much as the conventionally used Kiil dialyzer, can be assembled in about 10 minutes and can be sterilized in an autoclave.

Senator HILL. That is a great improvement; is it not?

Dr. WHEDON. Yes.

Senator HILL. The cost is running \$10,000 per year per patient; is it not?

Dr. WHEDON. That is correct, Senator, and possibly even more. The main source of this high cost, of course, is the need for trained and skilled personnel to manage the dialysis and keep up their care in the best fashion. But we do see that we can make a specific impact on this cost and care problem by trying to develop better devices for the purification of the blood in these patients. This particular dialyzer is of real value because it is considerably smaller and it appears to be more efficient than the prototype dialyzer which has been in use. In the Kiil dialyzer which has been used for some time, which is a long, thin breadboard-appearing device, it has been found that the majority of the purification process, the sifting out and movement of the toxic substances from the blood out into the dialysate fluid probably takes place mainly in about the first half of this long breadboard-like device. So these investigators looked into the question of using practically a shortened, half-sized device.

PERSONNEL COST

Senator HILL. What about the cost of the personnel to operate it?

Dr. WHEDON. There will be some saving in personnel cost here because the time for dialysis is reduced at least by a third. That means more patients can be dialyzed in the same period of time in the course of a week. The dialysis centers can step up their schedule of dialyzing patients.

Senator HILL. Therefore the cost to the individual patient will not be as great?

Dr. WHEDON. That is right.

Another way this should cut cost is in the fact that it ought to be easier to "set up." You see, every time a dialysis is done, Senator, the staff in a dialysis center has to clean up and sterilize the artificial kidney and get everything in proper order. With less time involved in the

preparation of the equipment, this also is certainly going to be a saving.

My formal statement as it continues here, you will see, will be a bit repetitious of what I have been saying.

Senator HILL. That is all right. Go ahead.

PRODUCTION AND TESTING OF NEW ARTIFICIAL KIDNEYS

Dr. WHEDON. Being compact, it has decreased very considerably the presently high blood priming requirement and the need for compensatory blood transfusions. This new artificial kidney can cleanse a patient's blood in 8 to 10 hours, compared to the 12 to 14 hours needed with the Kiil unit; thus, the bed capacity of artificial kidney treatment centers can be increased considerably with the aid of the new device. At present time a series of these new artificial kidneys is being produced for extensive testing under routine operating conditions. By no means is this a final solution to the problem, but it is a definite forward step toward greater efficiency and reduced cost in the artificial kidney approach to management of chronic kidney disease.

RESEARCH AND DEVELOPMENT CONTRACTS

The Institute's new artificial kidney program has initiated a large series of research and development contracts aimed at reduction of cost and improvement of existing dialysis—blood-cleansing—methods and equipment or at completely new approaches to artificial replacement to impaired kidney function. These projects involve development of improved blood cannulas—the most significant bottleneck in current dialysis—development and evaluation of new plastic surfaces for artificial kidneys, cannulas, and membranes which will not induce blood coagulation, improved dialysis membranes, development of new concepts in artificial kidney design such as “diafiltration”—a manmade imitation of the function of the natural kidney—and “hollow fiber” kidneys, evaluation and development of a special diet which could delay for substantial periods the needs for intensive dialysis, or for use in maintenance of uremic patients for whom chronic dialysis is deemed not feasible or is unobtainable, and many other projects related to improved and less expensive dialysis methodology or apparatus. Concurrently, through related grant-supported studies, the Institute endeavors to learn more about the biochemical and physiological characteristics of chronic kidney failure, a requisite for rational design of more efficient kidneys, and for better rehabilitation of patients maintained through dialysis.

NEED FOR DEVELOPING MORE FUNDAMENTAL INFORMATION

I would like to underline that thought, Senator, to say that there is a real possibility that in a few years we shall come close to the end of what we can do in an applied sense. In order to keep progress going we must develop more fundamental information about chronic kidney disease itself. We must learn more about precisely what the toxic substances are that appear to be backed up in the blood of a patient with an impaired kidney, why it is that patients become tired, listless, ineffective in their work and in their life, so that we can develop more

effective ways in which we can properly and promptly remove these specific toxic substances.

In addition, considerable efforts in improvement of techniques in kidney transplantation are being supported by the Institute through its grants program.

In conclusion, many other achievements of the past year could be cited in endocrinology and endocrine disorders, in hematology, and in other areas of responsibility of the National Institute of Arthritis and Metabolic Diseases.

PLANNING OF RESEARCH ACTIVITIES AND SUPPORT

During the coming year the Institute intends to devote increasing attention to the planning of its research activities and support, taking into account emerging new laboratory and clinical developments, the state of the art in the various disease areas, the possibilities for prompt application of new findings to patient care, and the possible need for special developmental programs in situations where the planned exploitation of new knowledge appears particularly promising. I am looking forward to another year in which we shall continue the Institute's sound and productive pursuits in health research and research training, and I wish to thank and commend this committee for enabling us to continue our unrelenting effort toward better health for our citizens.

PROPOSED INCREASE IN FUNDS

Mr. Chairman, I am submitting a request for \$143,954,000 as compared with the operating level of \$132,971,000 for 1967. The proposed increase for fiscal year 1968 will provide for an estimated additional 46 extramural research projects, for an orderly continuation of research training and fellowships and our sound direct research efforts in Bethesda, and for continued acceleration of our artificial kidney program.

(The special reports accompanying Dr. Whedon's statement follow:)

ARTHRITIS AND RHEUMATISM

Today, one out of every 15 persons in the civilian noninstitutional population of the United States suffers from some form of arthritis. This represents a total of 13 million Americans, most of whom are older people, women, persons in low income groups, and residents of rural farm areas. Every year, an estimated 12 million days of work are missed because of arthritis, costing the economy about \$220,000,000. An additional \$300,000,000 in salaries is lost by arthritics who are unable to work at all because of the disease.

As many as 30,000 persons with arthritis apply each year for disability benefits under the Social Security Administration's Old-Age, Survivors and Disability Insurance. During the latest calendar year for which figures are available, payments under this program to persons whose primary cause of disability was arthritis totaled \$85,000,000. An additional \$47,000,000 is paid to arthritics annually by the Welfare Administration's Aid to the Permanently and Totally Disabled.

Adding to this the cost of hospitalization, physicians' visits, drugs, physical therapy, nursing home care, and other items such as Federal and State income tax losses, authorities now estimate a total price tag of two billion dollars per year. The suffering in terms of human misery and economic privation is impossible, of course, to assess.

Through its intramural and extramural programs, the National Institute of Arthritis and Metabolic Diseases (NIAMD) stands in the forefront of the research battle against arthritis. This report summarizes the results of another year of research efforts on the problem of eradicating the suffering and loss of

productivity caused by arthritis. Research has continued on the ever challenging question of what causes these diseases, as well as into improved methods of treating them and preventing disability.

RHEUMATOID ARTHRITIS

Of all the major forms of arthritis, rheumatoid arthritis is the most crippling and the most puzzling in terms of etiology. In their search for a causative agent, investigators are encouraged, however, by recent evidence suggesting that mycoplasma, a type of microorganism, somewhere between bacteria and viruses in size and other properties, may be involved, directly or indirectly, in the etiology of this disease. The increasing interest of investigators in mycoplasma and the rapid development of research findings made it essential that a group of knowledgeable investigators be brought together not only to exchange information but to examine critically the evidence supporting a relationship of this organism to rheumatoid arthritis, and to stimulate further research.

The Institute, therefore, joined forces last February with the Division of Research Grants, NIH, to co-sponsor a working conference in Chicago on "The Relationship of Mycoplasma to Rheumatoid Arthritis and Related Diseases." About 35 authorities in the field met to discuss the mycoplasma, diseases in animals and man known to be associated with them, the evidence for associating them with human arthritis, and possible ways in which the organisms and their host might interact to produce the disease. Among the resulting proposals were that standard reference sera (immune blood fractions capable of reacting with mycoplasma) be made available in research banks for the use of investigators, and that medical and veterinary resources for the study of mycoplasma be brought together, where possible. Scientists at the meeting concluded that although the evidence linking mycoplasma infection to rheumatoid arthritis is fragmentary, it is sufficient, nevertheless, to encourage further research.

Another group of microorganisms, the *Bedsonia*, have commanded a considerable amount of research attention this past year. A team of investigators at the University of California produced arthritis in monkeys by injecting them with *Bedsonia* organisms isolated from human patients with Reiter's syndrome, a disease related to rheumatoid arthritis. They were then able to recover *Bedsonia* from all the infected joints and from various internal organs of the experimental monkeys.

The *Bedsonia* viruses have been reported to cause polyarthritis in lambs. This fact plus the knowledge that they cause human trachoma, inclusion conjunctivitis, and lymphogranuloma venereum led the the investigators to suspect that they might contribute to the development of Reiter's syndrome, a triad of urethritis, arthritis, and conjunctivitis. If further studies confirm initial findings, this work may eventually have important bearing on a whole series of disorders that have arthritic manifestations, including rheumatoid arthritis.

A Distinctive Rheumatoid Arthritis Cell

A study conducted by NIAMD and National Cancer Institute investigators has provided new information about certain cells which at times pose a problem in the differential diagnosis of rheumatoid arthritis. The investigators have described a distinctive multinucleated synovial giant cell in rheumatoid arthritis. The cells were present in the knee joint synovia of 9 out of 19 patients with active disease and positive serologic tests for rheumatoid arthritis. None were found in 9 seronegative rheumatoid arthritis patients or in a series of control cases. The giant cells were also observed in joints other than the knee. They can usually be readily distinguished from multinucleated plasma cells, foreign body giant cells, and Touton cells that also occur with some frequency in rheumatoid arthritis.

Twin Studies of Rheumatoid Arthritis

Two factors that have long been thought to be associated in some way with the onset of rheumatoid arthritis are heredity and emotional stress. Institute supported investigators at the University of Rochester have now obtained evidence from a study of the disease in twins that psychologic stress may play a greater role in determining onset of the disease than heredity.

The investigators studied eight sets of female identical twins, in which only one twin in each set was affected with rheumatoid arthritis. It was found that all the affected twins had undergone a series of life events that were demanding and restricting, during which time they developed their first symptoms. The

unaffected twin, in every case, had no comparable experience. These findings are consistent with the conclusions of a very extensive epidemiologic study by Institute investigators during 1963-65 that inheritance does not play an active role in the pathogenesis of rheumatoid arthritis.

Autoimmunity

One of the principal theories on the pathogenesis of rheumatoid arthritis is the concept of autoimmunity. This theory holds that the body, for some unknown reason, produces abnormal antibodies that are directed against its own tissues rather than against foreign material. Part of the evidence supporting this concept is the elevated gamma globulin (antibody) content of the blood in rheumatoid arthritis patients and the antibody-like nature of the characteristic rheumatoid factor—complex, specific proteins found in the serum of patients with rheumatoid arthritis.

A potent argument in the past against the antigen-antibody pathogenesis of rheumatoid arthritis, however, has been the frequent occurrence of arthritis in patients with a disease called agammaglobulinemia, which is associated with a deficiency of antibodies. Rheumatoid factor cannot be found in the blood of these patients, and immune gamma globulins can be found only in small amounts. Institute grantees at the University of Pennsylvania have now refuted this argument by showing that in agammaglobulinemia, immunoglobulins which are not detectable in the blood may be found in the joint. Their study indicated that in this disease immunoglobulins are apparently produced in demonstrable quantity in the synovial membrane, just as in typical rheumatoid arthritis. This demonstration of an immunoglobulin reaction in agammaglobulinemic arthritis gives further support to the concept of autoimmunity in rheumatoid arthritis.

Institute-supported investigators at the University of Texas have reported a study which offers hope for an effective form of therapy in rheumatoid arthritis and in other diseases caused by immune mechanisms. Adjuvant arthritis (an experimentally induced form of arthritis exhibiting a true, but transitory, immunological reaction and polyarthritis symptoms) was induced in 30 rats by injecting them with Freund's adjuvant. Ten of the rats were treated with rabbit anti-lymphocyte serum, which successfully suppressed the usual arthritic reaction; only one developed a moderate arthritis. In contrast, 20 control rats all developed marked polyarthritis. This important research lead is being followed up with additional studies to determine its possible applicability to treatment of human arthritis.

Further information related to the immunity aspects of rheumatoid arthritis was obtained in a fundamental research study completed by grantee investigators at the University of Pennsylvania. Their study of albumin distribution in selected rheumatoid arthritis patients has indicated that the low serum levels of albumin frequently encountered in these patients are associated with an increased fractional turnover rate of albumin, indicating increased albumin destruction rather than diminished synthesis. This finding is noteworthy in view of the knowledge that corticosteroid drugs, often a necessary form of therapy in rheumatoid arthritis, can further deplete reduced body pools of albumin, and thus may be deleterious to a patient who is already chronically ill.

A study conducted this past year at the New York Downstate Medical Center also concerned the relationship of certain drugs to serum albumin. A grantee investigator there studied a total of 180 commonly used drugs with respect to their interaction with serum albumin. He found that 13 of the drugs, including aspirin and other non-steroid anti-inflammatory compounds, interacted with serum albumin in a unique way. They had the ability to alter the tertiary structure of serum albumin molecules. Since all but one of the thirteen drugs exhibiting this unusual effect are known to be anti-inflammatory, this finding may lead to a valuable means of screening compounds for anti-inflammatory activity.

Another grant-supported study at Duke University has helped explain the anti-inflammatory and fever-reducing effects of aspirin (acetylsalicylic acid), used much more extensively than corticosteroid drugs in rheumatoid arthritis and other arthritic disorders. This finding concerns lysosomes, which are subcellular packets of enzymes found in large numbers in synovial lining cells of rheumatoid joints. It was reported last year that a different group of Institute-supported scientists had shown that a disruption of these lysosomes induces in rabbits an arthritic lesion similar to rheumatoid arthritis in man. Aspirin has now been found to stabilize lysosomes, suggesting that the drug's beneficial effects may be brought about through a lysosomal mechanism.

Aspirin was also the subject of a conference sponsored by the Institute at the New York Medical College last June. This working conference on the "Effects

of Chronic Salicylate Administration" brought together approximately 40 medical experts from the United States, England, and Canada to scrutinize the effects of repeated aspirin administration in man and animals and to determine in what specific areas more information is needed. The conferees explored the metabolism, pharmacology, and toxicology of salicylates; their pathologic effects in animals; and the possible relationship of these effects to long-term salicylate administration in patients with rheumatic diseases.

OSTEOARTHRITIS

During the past year several significant findings have been reported by Institute-supported scientists regarding osteoarthritis, a common disorder of unknown etiology associated with degenerative changes which alter the mechanical structure of the joints. Investigators at the Medical College of Georgia reported that *Rumalon*, a cartilage-bone marrow extract, is of clinical value in the treatment of osteoarthritis. The cartilage of patients with this disorder is thought to be deficient in chondroitin sulfate, a component of the ground substance of tissues. Thus, a drug capable of stimulating the synthesis of chondroitin sulfate in the affected tissues theoretically would be considered helpful in counteracting the pathologic changes in osteoarthritis. The scientists reported that *Rumalon* stimulates the uptake of radioactive sulphur in human osteoarthritic cartilage, indicating increased synthesis of chondroitin sulfate. This study warrants further investigation of the basic mechanism of action of this extract, as well as continued clinical trials of its effectiveness.

In another approach to this disease, nine German Shepherd dogs with osteoarthritis of the hip were studied in the Orthopedic Research Laboratories of the University of Pittsburgh. The grantee investigators obtained and studied slices of cartilage from the weight bearing and non-weight bearing areas of the arthritic femoral heads and from the distal femoral joints of these dogs. Their observations, along with other experimental evidence, suggest that the cartilage cells (chondrocytes) in the weight bearing area of osteoarthritic hips are synthesizing protein and RNA at a decreased rate in comparison with normal hips. This finding may provide a clue towards our eventual understanding of the fundamental disease process in osteoarthritis.

FUNDAMENTAL RESEARCH ON JOINTS

It has been suggested that contractions of the skeletal muscles may play a role in the development of joints during the embryonic stage. Previous investigations of this theory failed to preserve the exact embryonic environment, however, and the resulting joint deformities could not be attributed solely to the absence of movement. A study carried out by an Institute investigator in Bethesda, in collaboration with a grantee of the National Institute of Child Health and Human Development at Tufts-New England Medical Center, has now shown that joints do not develop normally in chick embryos paralyzed by three different techniques (two different neuromuscular blocking agents and surgical removal of the spinal cord). In striking contrast to the normal joint cavities in control specimens, the paralyzed joint cavities failed to develop and became filled with fibrous tissue which eventually bound the joint elements together. In addition, joint surfaces were flattened and distorted. That these abnormalities were due to paralysis *per se* (absence of fetal muscular contractions) was evidenced by the fact that the three treatments produced effective paralysis by different mechanisms, as well as producing identical joint abnormalities. Thus, the possibility of a common, direct toxic action on the joints was excluded. Results of the study clearly indicate that embryonic movement plays an important role in the formation of joints.

Some biochemical and biophysical aspects of joint stiffness were clarified in another study by a grantee investigator at the University of North Carolina School of Medicine. It is generally known that even temporary immobilization of normally movable joints can result in a permanent loss of motion. It is also appreciated that immobilization of joints surrounded by edematous soft tissue often produces joint stiffness more quickly and severely than immobilization of nonedematous extremities. The actual mechanism, however, by which range of motion is lost and the exact changes in joint structures which are responsible for decreased mobility are unknown. In this study, the investigator found gross, microscopic, and biochemical evidence that new collagen synthesis is the fundamental process in the pathogenesis of joint stiffness. He found that

flexion contractures of canine and rat knee joints produced by experimental fixation in the flexed position are the result of important changes in collagenous tissue on the flexor side of the joints. The study also showed that surgical removal of newly synthesized collagen from strategic areas around stiff human interphalangeal joints produces immediate relief of flexion contractures. Long-term results, however, of surgical removal of excess collagen from stiff joints have not been satisfactory, it was concluded, because of *subsequent* collagen synthesis during the healing process.

SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

Systemic lupus erythematosus is a grave, generalized disease which is manifested by structural and functional changes in the skin, joints, and internal organs. Young women are most frequently affected, and the disease is found most often in the 20-40 year age group. For many years, research on this insidious inflammatory connective tissue disorder was hindered by lack of an experimental animal model. Then in 1961 a strain of highly inbred New Zealand mice was discovered which developed a disease resembling human SLE without evidence of any concurrent infection or dietary deficiency. Further studies of these animals by grantee investigators at the University of Southern California have now provided additional clinical and pathological data which emphasize the close similarity between this model and the human illness.

Findings in the mice included typical LE cells (giant cells considered pathognomonic or characteristic for lupus erythematosus), antinuclear antibodies, hemolytic anemia, proteinuria, and nephrosis with kidney failure—all of which are associated with the human disease. The incidence and severity of the lesions were much more prevalent in female than in male mice, a finding which is also consistent with human SLE. Further investigation of this heretofore unavailable animal disease model should provide clues to its cause and development, should lead to controlled studies of various methods of treatment, and may provide keys to a better understanding of the human disorder.

Although the cause of systemic lupus erythematosus is not known, evidence points to an abnormal antibody reaction. Circulating antibodies that are capable of harming the body's own tissues have been found in SLE patients. It has also been suggested that these antibodies may combine with the products of tissue breakdown to form immune complexes potentially harmful to organs such as the kidneys. Institute-supported investigators at Washington University in St. Louis have now found further evidence to support this theory. Their immuno-fluorescent studies have detected extensive deposits of bound gamma globulin in the skin lesions of SLE patients. It is suggested that such lesions may be one source of antigens, in the form of tissue components, which are released into the circulation during tissue damage. These antigens then combine with circulating antibodies to form immune complexes capable of damaging a variety of organs in the patient.

SCLERODERMA

Scleroderma is a serious, systemic disease characterized by fibrous thickening of the skin and by scattered hardening of internal organs. Its etiology remains unknown, and there is no satisfactory form of treatment. Evidence has been obtained in an Institute-supported study at the University of Texas, however, that an underlying blood-vascular mechanism may play an important role in the development of this disease. The investigators studied biopsies of muscle from 8 patients with scleroderma who had no evidence of muscle involvement. A capillary abnormality, lamination of the basement membrane, was found in all the specimens obtained. Sixty-five per cent of all capillaries were involved in these patients, the overall frequency or number of blood vessels per volume of tissue was decreased, and the average diameter of blood vessels was slightly increased. It was concluded that a distinctive morphologic change occurs in a high proportion of the capillaries of the skeletal muscle of patients with scleroderma, a new finding that may be significant in the pathogenesis of this disease.

GOUT

One important cause of acute, extremely painful, and sometimes chronic destructive arthritis is gout, an inherited metabolic disorder associated with an increased amount of uric acid (hyperuricemia) in the blood and tissues of those afflicted. In this disorder, uric acid crystals are deposited in and around the

joints, resulting in inflammation, severe pain, and eventual destruction of normal joint structure. In especially severe cases, permanent crippling or severe kidney damage, or both, may result.

An Institute-supported study by investigators at the University of California Medical Center has shown that a high percentage of patients with gout also have calcification of cartilage, especially in their knees. A study of 58 patients led the investigators to postulate that the calcification is a secondary manifestation of gout, caused by the deposit of sodium urate crystals around the joints. Calcification of cartilage occurs with a number of conditions related to hypercalcemia (abnormally high calcium concentration in the blood), including vitamin D intoxication and hyperparathyroidism. It can also occur after trauma, infection, or degenerative changes, as well as in gout, ochranosis (another metabolic disease), and in pseudogout.

At the present time, gout can be the best controlled of all the arthritic diseases. Treatment aims at controlling excess uric acid accumulation in the body, and preventing or relieving the recurrent painful attacks. Potent drugs developed during the past decade (uricosuric drugs) are used to rid the body of its excess uric acid via the urine, thus preventing a build-up of harmful crystal deposits. These drugs, notably probenecid and sulfinpyrazone, are the mainstay of long-term maintenance treatment in gout. Present research emphasis is on development of methods of early diagnosis and further improvement in management so that deformity and such complications as described above can be prevented.

OUTLOOK

This brief review of some recent research accomplishments in the field of arthritis and rheumatism is obviously not all-inclusive. It is indicative, however, of the increasing velocity of medical science's attack on this debilitating group of diseases, and of the significant stimulus provided by the National Institute of Arthritis and Metabolic Diseases. The past year has yielded a number of exciting findings that offer hope to millions of sufferers, that greater understanding of these conditions will bring with it improved methods of treatment and long-term care.

DIABETES

Final solution to the problem of diabetes will depend upon an understanding of the more fundamental mechanisms at the root of the disorder, and the main thrust of Institute efforts in diabetes is in this direction. During the past year, studies conducted in Bethesda or supported by this Institute and carried out in other biomedical research centers have continued to increase in a very meaningful and useful way the body of knowledge concerning this complicated disease. Institute scientists and grantees have broadened their fundamental studies of the pathology of diabetes, of the action of insulin, and of the many biochemical and physiological changes which occur in body cells and fluids of diabetic patients.

The gains that have been made are especially significant in the light of recent figures released by the National Center for Health Statistics, which forcefully bring to mind the widespread occurrence of diabetes. It is now estimated that there are approximately four million diabetics in the United States. Furthermore, another five million other persons living today in our country are listed as potential diabetics, persons who may develop the disease sometime during their lives. The total number of persons in the world suffering from diabetes is approximately 30 million, while more than a quarter of the earth's population is believed to carry the hereditary gene for this disease.

A complex disorder, for which there is no known cure, diabetes ranks seventh in the list of diseases that cause death. It affects individuals predisposed to the disorder by the hereditary background. As a result of the body's inability to metabolize carbohydrates normally, the diabetic is inefficient in converting carbohydrates into heat and energy required for normal body functions and in storing them in the form of glycogen. The carbohydrates, converted into glucose, accumulate in the blood and spill over into the urine. As the disease progresses, abnormal carbohydrate metabolism becomes associated with derangement in the metabolism of fats and proteins.

In its severe form, diabetes rapidly progresses to a state of grave metabolic derangement, called keto-acidosis, which may result in coma and death unless controlled by insulin administration. In its less severe form, diabetes will result in accelerated degeneration or hardening of the arteries, with a greatly decreased

life expectancy. Although the disease can be fatal unless properly treated, in most cases it can be well controlled. Today, with proper treatment, most diabetics can lead a normal life and live almost as long as their fellow human beings. Despite good control of clinical symptoms, however, and the usual ability to hold in check the abnormal blood sugar level, the long-term complications of diabetes, primarily those affecting blood vessels, peripheral nerves, and the eyes, tend to develop relentlessly.

JUVENILE DIABETES

Diabetes can be divided into two clinical types—juvenile diabetes and maturity-onset diabetes—which have different prognoses, somewhat different treatment, and related, but possibly dissimilar, causative mechanisms. In juvenile diabetes the onset of the disease frequently occurs during childhood or the teens. Although the great majority of such patients can be maintained with regular insulin injections, life expectancy of the juvenile diabetic is considerably shortened.

It has recently been proposed that the inheritance and development of diabetes may be mediated through a structurally abnormal insulin. This concept has gained support during the past year from the work of an Institute-supported investigator at the University of Colorado. He has shown that insulin isolated from the blood of diabetic children is significantly more resistant to destruction by an insulin-specific enzyme than is insulin derived from normal individuals.

This finding suggests that there is a genetically determined difference in natural insulin which in the juvenile diabetic contributes significantly to the underlying biochemical disorders of diabetes. It would appear that resistance of juvenile diabetic insulin to the enzyme is a function of some difference in the insulin molecule itself, perhaps a structural change which affects the active contact site for the enzyme.

Diabetes resembling the human *maturity-onset* type has been described previously in hamsters and dogs, and in recent years, Institute grantees have reported it in a new animal model, heretofore unknown in the United States, the Egyptian sand rat. Institute-supported investigators at the Jackson Laboratory in Bar Harbor, Maine, now have described a metabolic disorder closely resembling human *juvenile* diabetes which has appeared as a new genetic mutation in inbred mice. These diabetic animals exhibited a severe disease syndrome with onset at an early age and a shortened life-span. Because the disease closely resembles juvenile diabetes in man and is readily reproducible, the new strain of mice will provide a much-needed experimental animal model for research on juvenile diabetes.

The Jackson Laboratory scientists already are conducting further studies of the chemistry, endocrinology, pathology, and genetics of the diabetes mutant. Such studies may well provide diabetes investigators with information on many of the unanswered questions about the etiology of diabetes.

DIABETES IN THE PIMA INDIANS

Institute scientists are continuing their studies of the Pima Indians of Arizona, a population group found recently to have the highest rate of diabetes ever reported in a circumscribed, and otherwise normal population group. Intensive studies are underway to investigate the mode of inheritance of diabetes, the natural history of the disease and its complications, the role of diet and other environmental factors, and the effect of various therapeutic measures.

The investigators' most recent findings indicate that the effects of child bearing do not account for the higher prevalence of diabetes among women. These findings are at variance with previous diabetes clinic studies by other scientists, principally in England, which have supported the hypothesis that pregnancy precipitates diabetes. Contrary to expectations, the prevalence of diabetes, especially in the younger age groups, was found to be somewhat higher in Pima Indian women who have *not* borne children than in those who have borne seven and more. The Institute scientists suggest that in previous studies which linked diabetes to pregnancy there was more likely an indirect association with obesity.

INSULIN ACTION

One of the greatest challenges in diabetes research is the fact that 45 years after the discovery of insulin much disagreement still exists about the mechanism of action of this important hormone. It is known that insulin's single most important action is to facilitate the entry of glucose into the cells of the body.

An understanding of the precise mechanism by which insulin accomplishes this task is essential to full solution of the diabetes problem.

It has been postulated that insulin may act primarily by initiating a disturbance at the cell surface which produces widespread structural changes. Such changes, it is theorized, would lead not only to increased penetration of glucose and other substances into the cell interior, but might also explain several other known effects of insulin. This hypothesis has been strengthened by recent studies by grantee-scientists at Mount Sinai Medical and Graduate Schools, New York, and at Johns Hopkins University, Baltimore. The New York investigators have shown that radioactively labelled insulin binds largely to the boundary membrane of the muscle cell. They have suggested that this action of insulin may facilitate the entry of glucose, electrolytes, water, and amino acids into the cell via a hormone-sensitive, possibly contractile, system which might also account for the known stimulating effects of insulin on protein synthesis. The Baltimore scientists have added support to this proposal by showing that insulin has an *immediate* effect on potassium and sodium movement in and out of rat muscle tissue. This finding implies that insulin acts on the outer boundary of muscle cells and is in line with the proposal that it acts primarily on the cell membrane.

PREDIABETES

It has been generally accepted that abnormal carbohydrate metabolism, as evidenced by elevated blood sugar levels and abnormal glucose tolerance tests, is the initial sign of clinical diabetes, and that small blood vessel disease develops as the disease progresses. Grantee-scientists at the University of Texas Southwestern Medical School in Dallas, however, have unearthed evidence to suggest that the reverse might be true; specifically, diabetes may be primarily a disease of the vascular system and not simply a disorder of carbohydrate metabolism.

These investigators have found that significant small blood vessel disease in muscles expressed in the form of marked thickening of the basement membrane of capillaries, which is characteristic of overt diabetes, appears in at least 50 percent of genetically prediabetic subjects prior to the onset of carbohydrate abnormalities and in practically all diabetic patients thereafter. Prediabetic subjects, persons genetically destined to develop diabetes sometime during their lives, were defined in this study as those having two diabetic parents, normal fasting blood sugar levels, and normal glucose tolerance tests.

These findings suggest that small blood vessel basement membrane thickening may represent the primary lesion of diabetes, followed only secondarily by carbohydrate derangements. The significance of this observation is that diabetes investigators are now afforded a new angle of attack, a direction for research efforts which may be much more fruitful in determining the fundamental cause of diabetes than previous studies directed mainly toward the abnormality in carbohydrate metabolism.

COMPLICATIONS OF DIABETES

Although the "control" or management of the clinical symptoms of diabetes has improved dramatically during recent years, complications such as heart disease, failing eyesight, hardening of the arteries, impaired kidney function, diabetic retinopathy and diabetic neuropathy continue to plague the older diabetic who has had the disease for many years. While concentrating primarily on the cause and prevention of the basic disease, researchers today are also vitally interested in these complications in the older diabetic, inasmuch as his life expectancy and function depend on them to a large extent.

Diabetic neuropathy, a condition characterized by lesions in the peripheral nervous system, is reported to occur in four per cent of diabetic patients, but undoubtedly occurs in a less severe form much more frequently. The exact cause for such lesions has not been established. An Institute-supported investigator at Massachusetts General Hospital in Boston has now obtained evidence to suggest that a little-known chemical pathway involved in sugar metabolism (the conversion of glucose to fructose via sorbitol) may be overactive in the sciatic nerve and spinal cord of rats with experimentally-induced diabetes. The existence of such a hyperactive abnormal biochemical mechanism in these tissues in diabetes, coupled with the marked local accumulation of its products, may have major implications for the development of diabetic neuropathy. It is known that in animals with galactosemia, another disorder of carbohydrate metabolism, such an aberration of biochemical pathways is involved in the development of cata-

racts. The present findings suggest that a similar mechanism may be operative in diabetic neuropathy.

MATURITY-ONSET DIABETES

A number of factors have been identified as predisposing an individual to diabetes. It is well established that those persons most likely to develop the disease are overweight, over the age of 40 years, relatives of diabetics, or mothers of large babies. During the past year Institute grantee-scientists suggested that idiopathic edema may also be a predisposing factor for diabetes.

Idiopathic edema is a term used to describe localized or generalized swelling, associated with accumulation of fluid in certain body tissues, the cause of which is unknown. The disorder most often affects women nearing the menopause who are overweight and emotionally tense and unstable. Studies of such patients now have suggested that idiopathic edema may be an early sign of diabetes. Scientists at the University of Vermont have found that these patients show both an abnormality of the small blood vessels and impaired carbohydrate tolerance, conditions which are known to precede the onset of clinically apparent diabetes. Their findings suggest that idiopathic edema may be an early sign of latent or mild asymptomatic diabetes. The investigators recommend that carbohydrate tolerance should be evaluated in idiopathic edema patients periodically, and treatment appropriate to the severity of any diabetic abnormality which may be found should be initiated.

SIGNIFICANCE OF LARGE BABIES

Other investigators at Boston City Hospital have questioned the concept that women who give birth to large babies (more than nine pounds) are likely candidates for diabetes. In a study of 5,534 pregnant women who were followed to term, elevated blood sugar levels were seen only in *overweight* women who gave birth to large babies. Overweight women with infants of average birth weight, as well as normal weight women with large babies had no such blood sugar elevation. This finding implies that it might be possible to make a more accurate clinical distinction than is now made between potential mothers who are most likely to develop diabetes and those who are not likely to develop the disease.

AUTOIMMUNE DIABETES

Grantee-scientists at the University of California, San Francisco, have obtained evidence to suggest that autoimmunity, the development and persistence of antibodies capable of action against one's own tissues, may play a role in diabetes. They have reported that an autoimmune diabetes closely resembling the early juvenile type can be induced in rabbits by immunizing them with bovine insulin.

The investigators had shown earlier that rabbits immunized with bovine insulin developed antibodies directed against their *own* endogenous insulin. It was observed subsequently that several of these animals not only produced such antibodies, but also, as a result of the autoimmune phenomenon, became acutely diabetic. This observation raises the possibility that autoimmunity may not only be a contributing factor to the diabetic state in insulin-treated human subjects, but may also be an important underlying cause of the disease. At the present time, however, evidence that autoimmunity may play a role in the causation of diabetes is equivocal, and further studies will be necessary to determine its role, if any.

OUTLOOK

The story of diabetes, and its control, is one of the more heartening in the annals of medicine. Thanks to the fruits of past research, most diabetic patients today can enjoy a normal home and family life and can work with only minor complications. Continuing advances depend upon investigations of the natural history of the disease and of its complications in diabetic populations, of genetic factors in various diabetic animals, and of insulin action. It is in these areas that research has made greatest progress in recent years. New research areas of particular interest and importance are determination of the basis for development of the ocular, neurologic and vascular complications of diabetes and investigation of the diagnostic significance of capillary membrane thickening for detection and possible preventive therapeutic management of individuals destined

to develop diabetes in future years. Progress in these two areas will contribute with particular effectiveness toward ideal control of this complex metabolic disorder of genetic origin.

GASTROENTEROLOGY

The field of gastroenterology continues to prove one of the more difficult and fascinating for biomedical research investigators. Due to the nature and diversity of gastroenterological diseases and disorders, research progress is achieved only after the most intensive, deliberate and time-consuming laboratory and clinical trials and experiments. Responsibility for the support of research in this area is a primary function of the National Institute of Arthritis and Metabolic Diseases (NIAMD).

Gastroenterology is not only vast from the standpoint of the number of individuals afflicted by disorders of the intestinal tract but also because of the extensive number of diseases it encompasses. Included are not only the better known disorders such as peptic ulcer, ileitis, and ulcerative colitis, but also numerous diseases of the intestine and its appendages about which much remains to be learned, such as diseases of the liver, gallbladder and pancreas.

Figures published last May by the Public Health Service in a study entitled "Estimating the Cost of Illness" (Health Economic Series No. 6) present impressive statistics on the direct expenses and indirect costs of sickness in the Nation. According to the study, which analyzes health, medical and related costs, the annual direct and indirect costs of illness, disability and death in the U.S. in 1963 exceeded \$58 billion, including \$34.3 billion expended for health care, services and supplies, and \$23.8 billion in indirect costs. In particular, the study noted that direct expenditures for diseases of the digestive system in 1963—\$4.2 billion or nearly 20% of the total—were higher than the expenditures for any other category of disease. Moreover another \$1.3 billion were attributed to diseases of the digestive system in indirect costs.

It is estimated that approximately 14 million Americans, or over seven percent of the entire U.S. population, now have or have had an ulcer of the stomach or duodenum. Each day, according to health statistics, and estimated 4,000 more individuals develop an ulcer, and every year about 10,000 persons die of complications of peptic ulcer. The cost in terms of lost man hours and direct medical expenses due to peptic ulcer alone is estimated at \$500 million annually.

The past year has seen several significant and far-reaching research findings in the field of gastroenterology by NIAMD scientists and investigators receiving grant support from the Institute. Foremost among these are improved therapeutic and diagnostic techniques for peptic ulcer, and observations related to problems of milk intolerance, malabsorption, intestinal absorption of calcium, intestinal hemorrhage, morphological changes in the human intestinal mucosa occurring during abdominal X-ray therapy, and ulcerogenic tumors of the pancreas.

PEPTIC ULCER

In the search for an anti-peptic agent, attention has been drawn to the sulfated polysaccharides because of their interference with peptic digestion. In a series of investigations, an Institute grantee has shown that amylopectin sulfate is an effective anti-peptic agent in the treatment of patients with chronic duodenal ulcer disease.

Initially, the effect of a single oral administration of amylopectin sulfate, at five dosage levels, was studied. In a second group of experiments, the effect of repeated administrations of amylopectin sulfate, alone and in combination with propantheline bromide (an anticholinergic drug which inhibits gastric acid and pepsin secretions at their source), on gastric peptic activity was studied. The addition of propantheline bromide was found to enhance the action of amylopectin sulfate. Since the latter exerts no antacid or anticholinergic action, the investigator concluded that its inhibitory effect on peptic activity must be a direct one.

Finally, another study was then conducted to determine the long-term effects of amylopectin sulfate, propantheline bromide, and a combination of both, on the prevention of recurrences of peptic ulcer disease. In a double-blind study of 60 patients with chronic duodenal ulcers conducted over a one-year period, it was found that patients responded significantly better on amylopectin sulfate alone, or in combination with propantheline bromide, than they did on propantheline bromide alone or on placebo therapy.

In another investigation, scientists receiving support from the Institute have challenged accepted principles of antacid therapy for duodenal ulcer by show-

ing that antacide compounds have a surprisingly long effects on gastric acidity when given one hour after a meal. Current use of antacid drugs in the management of duodenal ulcer, although subject to some controversy, is generally well accepted. The rationale for such therapy, however, is based largely on results of studies in fasting duodenal ulcer patients, which have shown that antacids act for only 20 to 40 minutes (due to rapid gastric emptying), and that doubling the standard dose does not prolong neutralization. The effects of antacids on gastric acidity now has been determined in duodenal ulcer patients following ingestion of a standard meal. Administration of a standard dose of antacid one hour after the meal depressed gastric acidity for at least three hours, while doubling the dose exerted an even greater effect and prolonged the drug's action. These findings suggest that the conventionally accepted antacid studies in fasting ulcer patients, and the conventional directions for taking antacid compounds (usually 2 or more hours after meals), should not form the basis for current principles of antacid therapy, and indicate that administration of antacid drugs in usual doses one hour after a meal constitutes rational and effective duodenal ulcer therapy.

Meanwhile, research findings of another Institute grantee indicate that the development of stress ulcers is preceded by gastric hypersecretion resulting from hyperplasia of all gastric mucosal cellular elements. Stress ulcers often occur rapidly in the stomach following surgery, physical or emotional trauma, or administration of steroid drugs. While it is known that stimulation of the central parasympathetic nervous system causes hypersecretion of hydrochloric acid and pepsin (both known ulcerogenic factors), the gastric mechanism responsible has not been elucidated. The Institute grantee, in this study, showed that continuous central parasympathetic stimulation causes marked hyperplasia of all gastric mucosal cellular elements, followed by development of gastric ulcers histologically indistinguishable from those seen in patients with chronic ulcer disease. These findings suggest that formation of stress ulcers is preceded by gastric hypersecretion resulting from gastric mucosal hyperplasia.

Also of considerable interest in the field of peptic ulcer research is the recent finding of another Institute-supported scientist who reported a decline in the rate of recurring ulcers to one-half of one percent when surgery has been done optimally. Just prior to World War II, ulcers recurred in 15 out of every 100 patients treated by surgery. At the turn of the century, the recurrence rate was about 80 percent. Most recurrences are suffered by patients whose original ulcer was of the duodenal variety, which is about ten times more frequent than gastric ulcers. The current favored treatment for duodenal ulcer, the investigator reported, now includes surgical removal of only 30 percent of the stomach. Prior to World War II as much as 70 to 75 percent of the stomach was removed, and this led to a higher percentage of undesirable postsurgical complications than the minimal removal favored at present.

INTOLERANCE TO MILK

Last year Institute-supported researchers traced the cause of milk intolerance in certain otherwise normal adults and in patients with inflammatory bowel disease to a deficiency of the intestinal enzyme lactase, which converts lactose or "milk sugar" into glucose and galactose. Evidence also was found that intolerance to milk is a relatively common syndrome in adults. Other Institute grantees now have shown that this syndrome is much more common in the Negro population than in the white, suggesting that intestinal lactase activity levels are genetically controlled. Lactose (milk sugar) tolerance and glucose-galactose tolerance tests were performed on 40 randomly selected healthy adult male subjects, 20 Negro and 20 white. Small-intestine biopsies were obtained and assayed for lactase and related sugar-splitting enzymes. Nineteen Negro and two white subjects gave histories of milk intolerance with onset during or after adolescence.

Lactose intolerance, as revealed by test and accompanied by abdominal symptoms, occurred in 20 of the 21 milk-intolerant subjects, of whom 18 were Negroes. In milk-tolerant control subjects, lactose tolerance tests were normal and were not accompanied by symptoms. Combined glucose-galactose tolerance tests did not produce symptoms in any subjects. Intestinal lactase deficits as determined by biopsy were observed in 14 of the 20 Negro subjects, but in only one of the 20 white males. This marked racial difference in the prevalence of lactase deficiency suggests a possible genetic etiology for which there is a precedent—previous reports of severe diarrhea in both children and adults due to inherited deficiencies of lactase and related intestinal enzymes. The Institute investigators

suggest that environmental or selective factors in Africa may have played a role in establishing and maintaining low lactase levels as an inherited trait. They also suggest that the African ancestors drank very little milk after weaning, resulting in a diminished stimulus to production of lactase.

This study has considerable diagnostic and therapeutic significance, with particular import for Negro patients presenting with a variety of gastrointestinal symptoms, such as diarrhea, nausea, abdominal pains, which do not appear to be related to any specifically manifest pathologic lesion. In view of these findings, it becomes necessary to rule out, in such patients, the presence of milk intolerance or lactase deficiency (a diagnosis not arrived at often in adults at present). Once this diagnosis is confirmed, dietary restriction of milk, milk products, and foods containing milk sugar (lactose) usually leads to the cessation of the distressing symptoms.

Since completion of this study, an article from Uganda reported a 72 percent incidence of lactase deficiency in African Negroes, a figure strikingly similar to that reported by the grantees' study in Baltimore. Tribal differences found in the Uganda study provide further evidence of a hereditary basis for lactase deficiency.

NEW TREATMENT OF MALABSORPTION IN INTESTINAL SCLERODERMA

The etiology of malabsorption in patients suffering from intestinal scleroderma (in which the basic changes in the gastrointestinal tract are atrophy and fibrosis of the smooth-muscle coats) has been the subject of considerable debate. Malabsorption in this disease is characterized by abdominal distention and discomfort, vomiting and diarrhea. In this study by an Institute grantee, three of four patients were documented malabsorption related to intestinal scleroderma responded dramatically to broad-spectrum antibiotics with remission of their symptoms and improved absorption. The findings suggest the usefulness of this form of treatment and the possible role of bacteria in the pathogenesis of malabsorption in these patients.

Each patient had evidence of disseminated scleroderma for many years prior to onset of intestinal symptoms, and in each, symptoms of esophageal disease preceded those of intestinal involvement. Malabsorption was proven by sensitive absorption tests. Bacterial proliferation in the upper small intestine was suggested by increased urinary excretion of the tryptophan metabolite, indican (indoxyl sulfate), and was confirmed by culture of aspirated duodenal contents. During prolonged antibiotic therapy, two patients who had been semi-invalids regained 20 and 15 pounds in weight, respectively, and were able to resume normal activity. The only complication of prolonged antibiotic therapy during the study was a single episode of distention and diarrhea, probably due to overgrowth of monilia, an occasional accompaniment of broad-spectrum antibiotic treatment; the side effect responded well to nystatin, an anti-fungal, anti-monilial agent.

INTESTINAL ABSORPTION OF CALCIUM

It has long been known that vitamin D facilitates intestinal absorption of calcium. Research that should lead to a better understanding of how vitamin D acts and how such deficiency conditions as rickets and osteomalacia are produced was reported in the past year by other Institute-supported investigators. In this study, the grantees showed that administration of vitamin D to rachitic chicks induces formation of a protein in their intestinal mucosa that specifically enhances the intestinal absorption of calcium.

Prior evidence suggested that vitamin D may mediate the intestinal absorption of calcium by stimulating the synthesis or operation of a "carrier substance" (which would combine preferentially with calcium in the intestinal lumen and would carry it across the intestinal mucosal barrier), and that this "carrier" may be a protein. The Institute grantees, in earlier studies, reported that a protein-like factor was involved in calcium uptake. Now the investigators have shown that this factor is indeed a protein, that it forms a soluble complex with calcium, and that there is a close chronologic relationship, after administration of vitamin D₃, between the appearance of the factor and the enhanced absorption of calcium.

GASTROINTESTINAL HEMORRHAGE

In another area of gastrointestinal research, an Institute-supported investigator has obtained experimental evidence that a blood-borne mechanism, in

addition to direct, mucosal irritant factors, may be responsible for aspirin-induced gastric bleeding. There have been numerous observations, clinical and experimental, demonstrating a causal relationship between gastrointestinal bleeding and ingestion of salicylate compounds. Previous research has shown an erosive effect of acetylsalicylic acid on the gastric mucosa and direct evidence of mucosal irritation after aspirin ingestion. This, in turn, has led to doubt regarding the ability of salicylates to cause gastrointestinal hemorrhaging by other than direct mucosal irritation.

In their experiments, the grantees succeeded in inducing bleeding in isolated, denervated stomach pouches (Heidenhain pouches) of dogs after oral administration of salicylates. Similar observations have been made previously by others using innervated Cope pouches, but the observed bleeding was not quantitated, and in such pouches the action of nervous stimuli conveyed via the still intact nerve supply, cannot be ruled out. The grantees found that pouch bleeding did not occur at the initial salicylate dose level, but was significant at a larger dose level. During the third *control* period the mean daily blood loss from gastric pouches was 0.292 cc, compared to a mean of 3.12 cc during the third *treatment* period. Choline salicylate had no significant effect on pouch bleeding. Thus, because bleeding occurred in the denervated, isolated pouches (which were never in direct contact with the drug) as a result of acetylsalicylic acid delivered to the main portion of the stomach, the Institute grantee's findings suggest that a *blood-borne* mechanism, as yet unidentified, may be responsible for gastric bleeding in some cases. Findings such as these prompted the National Institute of Arthritis and Metabolic Diseases to sponsor a conference, last summer, on the possible untoward effects of chronic administration of salicylates.

MORPHOLOGIC CHANGES IN HUMAN INTESTINAL MUCOSA DURING X-RAY THERAPY FOUND TRANSITORY

An important forward step affecting X-ray therapy resulted from research supported by this Institute this past year. Studies by NIAMD grantees described morphologic changes which occur in the human intestinal mucosa during abdominal X-ray therapy.

In these morphologic studies of the intestinal tract, the investigators showed that extensive tissue damage of the small intestinal mucosa of man is regularly induced by therapeutic doses of X-rays to various abnormal growths in the abdominal region. The investigators found, however, that this tissue damage not only was associated with surprisingly few symptoms but also was rapidly reversible. Moreover, the damage appeared to be localized to the field of irradiation.

Biopsies obtained from outside the field of irradiation remained normal throughout X-ray therapy, and gastrointestinal symptoms were minimal or absent in all patients. The observed morphological changes also reverted to normal two weeks following cessation of X-ray therapy.

ULCEROGENIC TUMORS OF THE PANCREAS

In the past year, investigators supported by this Institute also developed a laboratory, bioassay technique that has proved extremely accurate and useful in the diagnosis and surgical management of patients suffering from ulcerogenic tumors of the pancreas. Normally, the hormone gastrin which, once released into the circulation, stimulates gastric secretion of acid and pepsin, is produced in the stomach mucosa. A specific type of tumor of the pancreas is also known to release a gastrin-like substance into the circulation, which is capable of stimulating a constant overproduction of gastric secretions, thus leading to peptic ulcer production.

Utilizing the new technique, the Institute-supported grantees were able to detect an excess of this gastrin-like hormone (which stimulates gastric acid and pepsin secretion and thus induces ulcer formation) in the blood, gastric juice or urine of patients with ulcerogenic tumors of the pancreas. In these studies, the new diagnostic technique has shown a positive result preoperatively in all patients with an ulcerogenic tumor. In addition, the investigators found the technique useful as an aid to the surgeon in determining in advance the most appropriate operative procedure. In each case in which the diagnosis of ulcerogenic tumor was established by utilizing this new laboratory technique, the investigators reported, the diagnosis was also substantiated by biopsy.

LIVER DISEASE

Fatty Livers

Past Institute-supported studies have indicated that excessive alcohol ingestion can lead to development of fatty liver in man *despite* a concurrent adequate dietary intake. The origin of the fat accumulated in the human liver, however, has not yet been reported, whereas in rats, conflicting findings have been published.

In a new study involving five volunteer subjects, Institute-supported investigators now have found that fat which accumulates in the liver under certain conditions differs markedly from that found in body fat depots. Following ethanol (alcohol) ingestion with a fat-containing diet, it was found that the fat which accumulated in the liver was composed largely of fatty acids contained in dietary lipids. When ethanol was ingested with a low-fat diet, the fat in the liver had a large component of endogenously synthesized fatty acids. Thus, the Institute grantees concluded that the fatty acid composition of the alcoholic fatty liver is largely determined by the nature of the diet ingested with the alcohol. These findings are of significance in that they provide an insight into the pathogenesis of the alcoholic fatty liver and indicate that regardless of the lipid content of the diet, alcohol *per se* in even moderate amounts is the prime factor which can lead to the production of a fatty liver.

Acid Mucopolysaccharides in Chronic, Progressive Liver Disease

Although the causes of active progressive chronic liver disease in man are as yet unknown, it has been suggested that a possible mechanism may be related to the marked alterations of hepatic connective tissue ground substance which have been observed in this type of human liver disorder. Since acid mucopolysaccharides are a part of this substance, an Institute grantee undertook a study of changes of acid mucopolysaccharides in human liver disease.

In this study, the relationship between liver disease and hepatic acid mucopolysaccharides was examined in 666 patients. Histochemically demonstrable acid mucopolysaccharides were detected in increased amounts and at abnormal locations in those types of hepatic injury which were usually, though not invariably, followed or already accompanied by cirrhosis. Those types of hepatic lesions which were not associated with the accumulation of acid mucopolysaccharides were not regularly followed by fibrosis and cirrhosis.

Based on these findings, demonstration of increased amounts of acid mucopolysaccharides in liver biopsies can be of practical diagnostic and prognostic importance for predicting the likelihood of development of liver fibrosis or cirrhosis. Furthermore, demonstration of these acid mucopolysaccharides could serve as one of the objective criteria for determining the effectiveness of any therapy designed to prevent cirrhosis or to suppress fibroblastic activity.

Exchange Transfusion in Severe Hepatitis

An estimated 1200 patients die each year of acute hepatitis in the United States. The life of one patient apparently dying of acute hepatitis has been saved, however, by Institute-supported scientists in Boston who employed experimentally massive exchange blood transfusions. This procedure, used as a last resort measure on two successive days, resulted in unmistakable clinical improvement within 48 hours, gradual recovery, and discharge from the hospital six weeks later.

It is noteworthy that a group of investigators in South Africa reported, almost simultaneously, similar successes with the same procedure in seven of eleven such patients. Although such an extreme measure as exchange transfusions should be reserved for extremely ill hepatitis patients who do not respond to more conservative therapy, the gratifying results obtained by the Boston scientists justify further exploration of this form of therapy.

OUTLOOK

Although this resume of research progress in gastroenterology, encompasses but a small portion of the NIAMD-financed research in this extremely broad field, it demonstrates the diversity and productivity of the many investigations conducted and supported by the Institute. These and other research findings are systematically uncovering numerous promising and new scientific leads and approaches in the search for improved methods of treatment and diagnostic techniques for the millions of individuals disabled by and afflicted with gastrointestinal diseases and disorders. Some of the basic mechanisms of these diseases have been clarified; many as yet elude medical research.

The task before medical science in this respect is not easy, however promising the future. Many factors and problems related to gastroenterologic diseases remain to be resolved. There still exists an urgent need for the infusion of additional research workers into the field, a need which the NIAMD will endeavor to fulfill through its continued support of research and research training in centers across the country. A continuing, broad scale and aggressive program of research is essential if we are to build upon our fund of biomedical knowledge which is the primary source for all advances against human disease and if we are to capitalize on it for more effective application to treatment of these diseases of broad popular and economic impact.

CYSTIC FIBROSIS

Cystic Fibrosis (CF) is an inherited generalized metabolic disorder characterized by an abnormality in the products of all bodily glands which secrete fluid to external body surfaces. (By medical definition the gastrointestinal and respiratory mucosa represent such external body surfaces.) These glands secrete two major types of fluid—watery sweat produced primarily by the glands of the skin, and mucus fluid intended to lubricate the bronchioles of the lung and the gastrointestinal tract. The abnormalities which occur in both these types of secretions are responsible for the clinical symptoms and signs observed which have been recognized as the distinct disease entity, cystic fibrosis, since 1938.

The basic metabolic disorder of exocrine secretion results in three principal clinical problems. First, and least disabling, is the production of sweat with a high salt content. The unique composition of the sweat has become the primary source of medical diagnosis as well. Because of this sweating defect many patients are unable to conserve salt, especially in hot weather, so that excessive sweating may lead to severe weakness and even death.

A second, and considerably more serious facet of the disease is based on the abnormality in the function of the mucus-secreting glands of the body. In cystic fibrosis, the mucus-producing glands fail to secrete their normal, clear, free-flowing fluid. Instead, they produce an abnormally thick, sticky mucus which tends to obstruct the ducts or openings of the glands. These abnormal secretions lead to a variety of serious complications. When the thick mucus accumulates in the ducts of the pancreas, it interferes with the function of this gland to supply digestive enzymes to the intestinal tract. Depending on the severity of this complication, the patient will suffer from malnutrition and its sequelae. The malnutrition of children with cystic fibrosis, combined with their repeated respiratory infections, results in general underdevelopment, poor musculature, and retarded bone growth.

The third most important complication involves the lung. Nearly all CF patients develop chronic lung disease at some time during their illness. Thick mucus deposits clog passages in the lungs or the branches of the windpipe, causing labored breathing or chronic cough. In time, bacteria may multiply in the accumulated secretions, and the child may fall victim to chronic bronchitis or even pneumonia. CF patients are extremely susceptible to lung infections and may succumb to pneumonia; lung disease accounts for 90 per cent of the deaths from this disease. Obstructed, damaged lung tissue may also impede blood circulation, and occasionally a child may die of chronic heart strain.

CF is the result of an inborn error of metabolism, inherited from parents who carry the genetic trait for the disorder. A carrier of the trait may not show any symptoms of the disease, yet is capable of passing the trait to his offspring, who, in turn, may transmit the disease. Cystic fibrosis is inherited in the active overt form when both parents carry the genetic trait. The genetic predisposition for cystic fibrosis may be passed on to the offspring of a couple if only one of the parents carries the trait. Thus for every overt case there is a large reservoir of occult carriers. As a matter of fact, this hidden affected population is reliably estimated at 2-5 per cent of the general population. Clearly, understanding and successful treatment of this disease would be a major public health achievement.

Although in the past cystic fibrosis was confined to the pediatric age group by its high mortality in infancy and early childhood, the disease is now recognized with increasing frequency among adolescents and adults. Recent studies have shown that there are far more adults than previously believed who carry a partial genetic endowment for the disease. The studies also have suggested that variants of cystic fibrosis may be responsible for some chronic lung and gastrointestinal disorders in adults usually not recognized as due to cystic fibrosis.

Cystic fibrosis has the highest incident and mortality rate of any of the hereditary diseases of children. As a killer of children under 15 years it outranks

poliomyelitis, rheumatic fever and diabetes combined. Its increasing frequency throughout the world has made it a public health problem of no mean proportion; estimates of its incidence in the population range as high as 1 in 1000 live births. During the past six years, 25 state departments of health have included cystic fibrosis in their crippled children's programs because of the very heavy expense for necessary and continuous care which families of afflicted children must meet.

RESEARCH DEVELOPMENTS AND TRENDS

The basic defect underlying cystic fibrosis is as yet unknown and much of the research carried on by scientists of the National Institute of Arthritis and Metabolic Diseases (NIAMD) in Bethesda and by Institute grantees is devoted to discovering its nature. Institute scientists in Bethesda are currently conducting laboratory and clinical studies in an attempt to delineate further the chemical and clinical manifestations of CF and to uncover the fundamental defect responsible for the disease. Trials are also being made to ascertain the best type of treatment for the chronic lung involvement which is the major cause of death. The relationship of this disorder to other types of chronic lung disease and gastrointestinal disorders is also being explored.

In addition to the research effort in Bethesda, the Institute supports financially approximately 30 different research studies of CF at non-governmental institutions throughout the country. During the past year a number of significant findings has been reported.

NEW DIAGNOSTIC TECHNIQUES

Early diagnosis and treatment of CF are of utmost importance in order to forestall in part development of irreparable lung damage and other serious complications of the disease. At the present time CF is diagnosed principally by the detection of excessive amounts of salt in the sweat. Sweat test facilities, however, are not always readily available, and results of such tests are not always conclusive.

Last year grantee scientists at Children's Hospital Medical Center in Boston devised a new, reliable diagnostic aid for CF which involves analyzing samples of toenails, fingernails and hair for elevated concentrations of sodium and potassium. The new test also proved useful in identifying adults who are carriers of the CF trait; at present there exists no uniformly reliable method for positive identification of such individuals. Furthermore, nail and hair samples, because of their ease in collection and storage, may be forwarded by mail, thus providing ready access to specimens which may be of diagnostic or genetic interest.

Just a few months ago an engineer at Washington University, Seattle, working in close collaboration with the Boston grantees, reported that by combining nuclear reactor techniques with fingernail clippings from 170 kindergarten children he could markedly accelerate screening of such children for CF. The new test involves irradiation of nail clippings from the toes or fingers in a nuclear reactor for about an hour. The amount of sodium in the nail clippings is determined by measuring the amount of radioactive sodium produced during irradiation. Sodium levels in the nails indicate to the researchers whether or not the danger of cystic fibrosis exists. As many as 400 specimens each day can be analyzed by this technique, as opposed to about 20 daily by conventional chemical assay. Only 0.1 mg of nail is needed for the reactor test, while the chemical method requires 200 times that amount.

These investigators believe that the importance of early diagnosis in cystic fibrosis makes the test a valuable screening procedure for all admissions to a newborn nursery. Brothers and sisters of known cases may also be examined to determine whether they are hereditary carriers of the disease, a Mendelian recessive trait.

Another investigator at the University of Nebraska has devised a diagnostic test for CF which, although somewhat less conclusive than the sweat test, may be most useful when results of other diagnostic procedures are equivocal. The new test involves microscopic examination of a sample of rectal mucosa obtained painlessly from the patient. Abnormal rectal mucus glands characteristic of CF are easily identified upon examination. Preliminary tests were performed on 24 infants and children with CF, and a positive diagnosis of CF was obtained in 16 subjects.

NEWBORN SCREENING TEST

Half the cystic fibrosis children who receive conventional, supportive therapy are dead by age three, while one third die in their first year. When prophylactic pulmonary therapy is added, however, mortality is reduced to about two per cent per year. A means of detecting cystic fibrosis in the newborn period promptly should further improve this outlook.

This past year an Institute-supported scientist reported a relatively simple, economical, and efficient sweat test for cystic fibrosis which can be applied routinely to newborn infants. Detection of cystic fibrosis in the newborn would permit earlier institution of prophylactic pulmonary therapy, thus increasing the life expectancy and decreasing the morbidity for cystic fibrosis children.

Sweating is induced by applying a heated aluminum cylinder to the infant's back for five minutes. The chloride content of the sweat then is measured directly by applying an electrode to the same area. Results obtained with the procedure are comparable to those obtained with a similar procedure in older children and to those obtained with conventional sweat tests. The test requires only about 10 minutes, is relatively simple to perform, and costs approximately 50 cents per infant. It is hoped that the demonstrated potential of the described procedure will speed development of standardized equipment for such a newborn nursery sweat test for cystic fibrosis.

PREDICTING CF

A new discovery has been made that will let couples know if their children are likely to inherit cystic fibrosis. For the first time a marker has been found in the blood of those diseased children and of parents who already have children with the disease.

It has long been known that cystic fibrosis is the result of a particular set of faulty genes in both parents. But until now no way was available of deciding accurately whether the fault was present in a potential parent or not. Now two pediatricians at Duke University, Durham, N.C., have found that when suitably concentrated blood fractions of parents of children with cystic fibrosis—those known to carry the genes—are placed on tissues taken from the tracheae of rabbits, then the minute eyelash-like cilia which cover the exterior of these cells and, which normally beat with a uniform wave-like sweeping motion, beat erratically and irregularly. Irregularity of beating (or sweeping) occurs also when the blood samples from children with cystic fibrosis are used. The doctors do not know what chemical component in such blood indicates the presence or possibility of transmitting cystic fibrosis, but the results are reproducible, making the test useful.

Cilia are present in the air passages in the lungs of all animals, including man. They sweep the droplets of moisture and collections of mucus in the lungs to the foot of the trachea from where they are coughed out. Their failure to keep the lungs clear of mucus is one contributing factor to the lung congestion characteristic of CF.

PROMISING AGENT FOUND

In a study of relationship between the sympathetic nervous system, which innervates glands, and salivary secretions, a grantee of the National Institute of Dental Research has been able to alter the chemical composition of saliva from submaxillary glands in animals and humans. He reports that guanethidine has improved temporarily the chemical balance of the components of submaxillary gland saliva in 20 children with cystic fibrosis. The cloudiness of their saliva, as compared with the clear secretion of normal children, is apparently due to an unusually high proportion of organic substances as shown by large amounts of nitrogen, and of certain enzymes and other proteins.

On the basis of the experimental circumstances, the investigator concluded that guanethidine acts directly on the submaxillary gland tissue and not through mediation of the nervous system or hormonal controls. He points out that it is the first available agent to separate two factors—the organic (nitrogen, amylase, glycoproteins) and the calcium salt components—associated with abnormal submaxillary gland saliva in cystic fibrosis. This drug may be a useful tool to determine the primary defect in cystic fibrosis. Since the organic component of external secretions plays such an important role in the pathogenesis of cystic fibrosis and since its level in the submaxillary gland saliva can be normalized by guanethidine, this agent may well be a useful research tool for further therapeutic studies.

OUTLOOK

The genetic character of cystic fibrosis makes the disease particularly pernicious. As advances in therapy make it possible for young patients to reach the reproductive age, the "load" of cystic fibrosis traits in the genetic pool of the population will increase. If the basic genetic defect in cystic fibrosis and a method of correcting it permanently are not discovered, an ever-increasing sector of the population may find itself heir to the gene. It is this characteristic which makes continued support of effective research on cystic fibrosis an obligation to future generations.

Table of obligations

	1964	1965	1966	1967	1968
Cystic fibrosis and related areas:					
Research grants.....	\$861,000	\$899,000	\$950,000	\$1,052,000	\$1,101,000
Intramural research.....	100,000	100,000	182,000	197,000	213,000
Collaborative studies.....			20,000		15,000
Total.....	961,000	999,000	1,152,000	1,249,000	1,329,000

CHRONIC KIDNEY DISEASE

Introduction

Recently, the National Institutes of Health, along with its long and active interest in the development of knowledge concerning kidney disease, has mounted a dynamic program of research on kidney transplantation and kidney substitutes such as the artificial kidney and peritoneal dialysis.

Three of the National Institutes of Health, the National Institute of Arthritis and Metabolic Diseases (NIAMD), the National Institute of Allergy and Infectious Diseases (NIAID), and the National Heart Institute (NHI) have categorical and basic research interests in the several aspects of kidney research. For example, studies relating to immunology and the infectious origin of kidney disease fall within the research purview of the NIAID, metabolic and urological, within the concern of NIAMD, while hypertensive problems are the research responsibility of the NHI. This report presents some of the problems and recent research progress in kidney disease.

In addition to the activities carried out by the three Institutes and described in this report, the Public Health Service has a broad program under the National Center for Chronic Disease Control in the field of kidney disease prevention and control. The Center's program covers four major areas: (1) preventive programs, (2) chronic dialysis programs, (3) continuing education, training, and information, and (4) development of basic data. Through project grants, the Center is currently supporting thirteen artificial kidney centers throughout the United States.

This report, as requested by the Committee, covers only those activities of the National Institutes of Health.

The kidney

The importance of the kidneys can be judged in part by the fact that they receive about one-quarter to one-fifth of the blood volume pumped by the heart. By selective excretion of certain substances and reabsorption of others, the kidneys play an extremely important role in regulating the composition of blood and other body fluids. They continually process blood to eliminate detrimental waste products of metabolism. The kidneys help to regulate the chemical environment of the body cells by regulating the concentration and composition of salts and the amount of water in the blood and tissues. The kidneys also produce substances which are important in regulating blood pressure and in stimulating the bone marrow to produce blood cells.

Causes of kidney disease

Latest available figures from the Public Health Service's National Center for Health Statistics indicate that 24,697 Americans died of kidney diseases in 1964. These figures do not include deaths attributed to conditions such as hypertension or stroke which may be secondary to an underlying kidney ailment. Experts who comprise the Scientific Advisory Board of the National Kidney Foundation estimate that the actual number of deaths in which kidney disease is the primary cause approaches 100,000 each year.

The term kidney disease encompasses a number of conditions of varying causation which attack the kidneys. Among the leading causes of kidney diseases are:

1. *Hypersensitivity diseases* in which kidney tissue is destroyed by an immune reaction initiated by any of a number of causes, including streptococcal infection.
2. *Infections* in which kidney tissue is attacked and destroyed by micro-organisms.
3. *Circulatory diseases* in which the kidney is affected as a result of disease of the blood vessels or the blood itself.
4. *Metabolic diseases* in which the kidney is secondarily affected, such as in diabetes or gout.
5. *Developmental disorders* in which the kidneys fail to develop or develop in an abnormal fashion.
6. *Obstructive conditions* in which urine flow is blocked with resultant pressure damage to the kidney and repeated infections.

One characteristic common to most of these diseases is their tendency to eventual progression to a common end-stage—the clinical syndrome of uremia. Uremia is the collection of signs and symptoms resulting from the loss of the kidneys' normal functions of removing wastes from the body and of regulating the internal chemistry of the body.

Patients with uremia may be divided into two groups, those with acute kidney failure, and those with chronic renal insufficiency. In acute kidney failure, the kidneys are damaged by an acute insult and the symptoms of uremia progress rapidly. The damage may be reversible, however, and after a short period the kidneys may heal and regain normal function. On the other hand, chronic kidney insufficiency is brought on by gradually progressive destruction of the kidneys from which they do not usually recover. In these cases the kidneys never regain the ability to reverse the trend toward ultimate, fatal uremia.

Treatment of kidney failure

It follows that the natural course of these two types of kidney failure dictates the goals of therapy. In acute, potentially reversible kidney failure, the primary objective is to sustain normal life processes in the patient for the relatively short period of time during which his kidneys cannot function. Eventually recovery may be complete, in which case no further treatment is needed, or the disease may progress and become chronic. In cases of chronic kidney insufficiency, the problem is much more difficult, and some measures of continuing therapy are necessary.

The two substitutes for kidney function which have come into use are peritoneal dialysis and the artificial kidney (hemodialysis). Both methods employ the same basic principle of dialysis: dissolved substances found in high concentration in the fluid on one side of a semi-permeable membrane will tend to pass through this membrane into the fluid on the other side where these substances are absent or found in lower concentration.

Kidney transplantation is a technique whereby a functioning kidney from a donor is transplanted into a patient who has lost his kidney function. Although this procedure is at present still in its experimental stage, it shows considerable promise. With continued research, it is hoped that kidney transplantation, supplemented by efficient methods of hemodialysis until the patient is ready for an operation or until a suitable kidney is available for transplantation, will make fatal chronic uremia a menace of the past.

TRANSPLANTATION IMMUNOLOGY: EARLY PROGRESS IN BREACHING MAJOR BARRIERS

The living body's implacable determination to destroy any intruder—life-saving graft as well as a life-threatening microbe—remains the principal major barrier to successful kidney and other organ transplantation.

The surgical techniques for transplanting kidneys have in large part been developed and are constantly being refined. Today, most kidney transplant operations are surgical successes, technically. The immune response of the body, however, if not suppressed, usually destroys the transplanted tissue within a short time.

When a kidney is transplanted between identical twins, no immune response occurs because the donor's and the recipient's tissue cells, having a common genetic origin, are chemically identical. Kidney transplants between identical twins have, therefore, been generally successful.

The body ordinarily defends itself against a graft, as against any foreign substance, by making counterattacking substances (antibodies), and by mobilizing specialized, defensive processes. This immune response is triggered by antigens in the graft tissue. In a series of complex events the unwelcome graft is attacked and ultimately destroyed.

Progress has been made over the years in the science of transplantation immunology. The discovery in 1901 of the AB blood groups made possible the matching of erythrocytes, or red blood cells, so that today typing and effective pairing of donors and recipients make blood transfusion a successful medicine tool.

The problems involved in tissue transplantation are considerably more complex. Considerable achievements have, however, been made. A number of transplantation, or histocompatibility, antigens has been identified. They are found in both body tissues and leucocytes (white blood cells). Some tests have been devised to compare the reaction between the leucocytes of prospective donors and recipients and thereby measure the degree of compatibility between their tissues. Early transplant operations using these leucocyte-matching tests have had a success rate in unrelated donors and recipients approaching the rapidly improving success rate in related persons who, because they are likely to share a number of antigens, are more likely to have a higher degree of compatibility. Investigators believe that leucocyte typing may ultimately become the standard means of proper selection of organ donors.

The defensive immune response of the body can be counteracted and the eventual destruction of the transplanted kidney delayed or possibly prevented through use of certain so-called immunosuppressive drugs. Whole body x-ray irradiation also can reduce the formation of antibodies. These aids to transplantation prolong the functional life of the transplant, but at the same time may weaken the host's resistance to infection.

In short, progress has been made in the experimental science of tissue transplantation immunology. But much remains to be learned before the replacement of failing kidneys and other organs with new ones can become a reality.

Tissue Typing

The National Institutes of Health began to expand its program in tissue transplantation immunology in 1964, when Congress authorized a broad program of research in the field. Grant-supported research projects, intramural studies, and organized developmental work in medical centers and industry have been stepped up in succeeding years. The efforts of many laboratories have been focused on hurdling the remaining barriers through both basic research in immunology and kidney diseases, and through development of a badly needed universal tissue-typing system.

The urgent need, and the short-term goal, of this program is the identification of all the tissue transplantation antigens and their classification according to relative strength. Experimental work has shown that there are apparently only 6 to 10 major transplantation antigens rather than the 15 to 30 which had been predicted on the basis of animal studies. This finding is encouraging, but investigations are being accelerated (1) to make certain that the new number represents all the significant antigens, (2) to isolate those that are the strongest, and (3) to improve the techniques for antigen-antibody detection.

A major requirement of the typing program is specific, high quality antisera (blood serum containing antibodies) for comparing typing results and serologic techniques. The contract supported program of NIAID had produced by the end of 1966 more than 36 liters of antileucocyte antiserum for issuance to tissue-typing laboratories all over the world. Through two contractors (one in Europe, the other in the United States) that are acting as serum banks, the sera are being distributed for further characterization studies, for attempts to fix the total number of leucocyte antigens, for evaluation typing of transplant patients and prospective donors, and for attempts to isolate and purify histocompatibility leucocyte antigens obtained from tissue culture and other sources.

There has been encouraging evidence that the leucocyte-matching tests apparently do identify the key transplantation antigens. With these typing tests it has been possible to select from a random population unrelated donors whose kidneys provided as good a survival rate and function as kidneys from donors related to the recipients. Further refinement of techniques, however, must occur before the present laboratory procedures can be applied to the selection of patients and donors in kidney transplantation centers throughout the country.

Research on the transplantation antigen-like activity of bacterial fractions gives hope that eventually antigens can be produced from bacteria or cell cultures and substituted—in both typing and matching—for living leucocyte cells, which are difficult to store. They may some day also prove useful in stimulating tolerance to foreign grafts.

Adjuncts to Tissue Typing

Because transplants, except between identical twins, are frequently ultimately rejected by the body, the critical problem still is to find methods to reduce—and some day to eliminate—the immune response to grafts. Lasting success depends on matching the recipient's and donor's cells as closely as possible, and then overcoming any remaining minor incompatibility by inducing immunological tolerance in the recipient's body.

Certain immunosuppressive drugs for use in the prevention or control of the rejection phenomenon are being studied. Studies are being conducted to find more effective and less toxic drugs to control the immune response.

Two groups of investigators have produced specific immunologic tolerance to grafts in mice and in dogs by administration of antilymphocyte serum before the transplant operation. This procedure resulted in striking prolongation of the graft and apparently induced tolerance also to second grafts. Another group found that antiserum to thymus prolonged skin graft survival in rats twice as long as antiserum to lymphocytes.

In addition to antilymphocyte serum, total and sub-total body irradiation, cytotoxic drugs, and surgical alterations of the lymphatic system have been used in attempts to reduce or eliminate the lymphocyte population and thus increase tolerance to homografts. These methods, however, also cause undesirable general effects, such as depression of bone marrow and red blood cell formation.

Now selective destruction of *lymphocytes* and a consequent tripling of kidney homograft survival-time in dogs has been achieved by grant-supported scientists. According to this method, radioactive pellets of yttrium are sealed in a Silastic tube and the tube is suspended within the aorta by a single Dacron suture. The yttrium isotope was chosen because of its short half-life and because the beta rays it emits are mainly confined to the immediate area of the implant. Thus, the bloodstream serves to shield the adjacent aortic wall at the same time it is bringing the extremely radio-sensitive lymphocytes within range of the capsule.

Functional survival of the kidney homograft was more than tripled in 10 radiation-implant dogs over that of eight untreated control animals. No permanent survivals were obtained with the short-term radiation employed, but further studies are under way to evaluate longer periods of radiation, and various combinations of radiation and immunosuppressive drugs.

Supportive Basic Research

Paralleling the efforts to develop reagents, tests, and techniques for applying the knowledge already gained are research projects aimed at understanding the basic immunologic processes of the human body. Intramural projects in Bethesda on immunology focus on such areas as hypersensitivity, mechanisms of the immune response, immunochemistry of serum antibodies and antisera, and induction of delayed hypersensitivity. Many of these studies are closely related to the problems of transplantation.

Protection of Transplant

This past year, a grant-supported scientist markedly reduced early failure of kidney homografts by a program of "renal-protective" management. By hydrating living, consanguineous donors immediately before operation, the grantee has been able to reduce significantly early functional failures of kidneys transplanted from the donors. This program of "renal-protective" management was employed to offset kidney damage that begins with anesthesia and is worsened during subsequent surgical manipulation of the organ.

In his study, 10 patients (Group A) received kidneys from donors who were given routine preoperative treatment, while 21 patients (Group B) received kidneys from donors who were given "renal-protective" management: induction of diuresis (increased urine excretion) before anesthesia, strict maintenance of blood pressure during surgery by continuous fluid replacement, and maintenance of diuresis by intermittent injections of the drug mannitol.

There was evidence, too, that "renal-protective" management, coupled with immunosuppressive pretreatment of recipients with corticosteroid drugs and azathioprine, enhances survival of grafted kidneys beyond the first two months: overall mortality two to 24 months postoperatively was 60 per cent in Group A patients and 19 per cent in Group B patients.

Recent data from the Human Kidney Transplant Registry clearly show that most graft failures occur within 60 days after transplantation. The present results suggest that such failures may stem from occult renal damage initiated within the donor during nephrectomy, and that such damage may be largely prevented by prehydration and mannitol-induced diuresis in the donor.

Clinical experiences with 100 consecutive non-twin kidney *homotransplants* performed during the four year period from 1962-1966 were recently presented by a group of grantees to the Third International Congress of Nephrology meeting.

The long-term follow-up data obtained from this large number of patients permitted some interesting comparisons between transplants from related living donors (RLD) and those from cadaver donors. These comparisons, based on duration of excellent kidney function rather than patient survival-time, revealed plateaus in kidney function at 12 months for cadaver kidneys, and 18 months for those from related living donors. This function was maintained for 30 months in 41 per cent of the cadaver kidneys, and for 36 months and over in 58 per cent of the RLD kidneys.

The study also catalogues some signs and events occurring within weeks of transplantation that, in many cases, enable one to predict the long-term fate of the transplant, whether cadaver or RLD in origin. For example, if the transplant undergoes a rejection crisis within the first week, or if rejection crises occurring during the first four months are severe enough to require the use of an artificial kidney, the odds that the transplant will continue to function beyond one year are practically nil. If no rejection crises occur during the first four months, prospects are excellent for continued good function for a period of several years—up to three and one-half years in this study. Predictions between these two extremes can be based on whether or not rejection crises, however severe, can be brought under control within 30 days.

Future Program Direction

Organ transplantation is still an experimental science, despite the limited success with kidney grafts. And there are many unanswered questions, such as: What mechanism is involved in the survival of a transplant? Why do failures occur? How do antibodies destroy an organ?

Multidisciplinary studies of the immunologic and therapeutic means available for achieving permanently successful grafts must continue to be pressed. Medical science must continue to use all the weapons it can produce to breach the body's own barrier against life-saving new parts: constantly refined surgical techniques, continued and improved use of dialysis, improved and simplified tests to insure the closest match with the recipient's own tissue, and the suppression of other rejection processes through new immunosuppressive agents and techniques, applied to both the donor organ and to the recipient.

Concurrently, there will be an ever-increasing need for healthy organs with which to replace diseased or worn ones. Already under study are tissue preservation techniques which will permit the storage of functional whole organs and diagnostic reagents until they are needed.

THE ARTIFICIAL KIDNEY

Artificial kidneys are mechanical devices that can be used to cleanse the blood when the natural kidneys fail. Until permanently functioning transplantation of healthy kidneys from living or dead donors becomes a practical reality, blood purification through repeated use of an artificial kidney (chronic hemodialysis) is the only hope for survival for the majority of such patients. While *some* patients in chronic kidney failure are being kept alive and productive through repeated treatment with the devices currently in use, *most* candidates for such treatment are unable to receive these benefits because of the extremely high cost and complexity of treatments.

Although artificial kidneys have been known for almost two decades and have been used in cases of poisoning or acute kidney failure, the use of these devices in any one patient has been limited in the past. Each time a patient required the use of such a blood purifying apparatus, it was necessary to insert tubes into a major vein and a major artery to conduct the flow of blood from the patient through the artificial kidney and back into the patient's circulation. Each tube insertion often facilitated the onset of dangerous infections, and involved a new surgical procedure on a new pair of major blood vessels; thus, the number of times any one patient could be connected to an artificial kidney was limited.

About five years ago, an NIH grantee announced a successful innovation in the use of artificial kidneys aimed at permanent maintenance of patients with impaired or lost kidney function. His group, at the University of Washington in Seattle, had developed the use of permanently implanted, connected plastic tubes in an artery and vein of the forearm. This indwelling "Quinton-Scribner shunt" makes it possible to connect a patient repeatedly to artificial kidneys without special surgical procedures and without the use and ultimate sacrifice of a new set of blood vessels with each dialysis. Development of this shunt started a new era of hemodialysis in patients with permanently impaired kidney function.

During the last few years it has been shown that the repeated routine use of artificial kidneys in such patients on a regular schedule would permit the saving of lives which would be lost due to the otherwise fatal uremia. At the moment, however, using currently available techniques, the cost of hemodialysis both in terms of money and qualified manpower is extremely high, so that this life-saving treatment modality is, as yet, not available to all who might benefit from it.

The techniques and equipment involved still require improvement which must come about through strong research and development efforts. Authorities representing artificial kidney centers agree that improvements in hemodialysis must be based on additional knowledge of the nature of uremia. Such knowledge is as yet imperfect and must be developed side-by-side with efforts to improve artificial kidney apparatus and techniques, in order to assure maximal rehabilitation of patients maintained by chronic dialysis.

Pertinent National Institutes of Health Activities

For several years, intramural scientists have been working on the development of simpler, more efficient and more compact artificial kidneys, including one artificial kidney involving the use of activated carbon to absorb uremic wastes. These efforts have now advanced to a point where pilot models can be tested with laboratory animals and patients.

At the same time, the NIH has invested major funds in extramural support of research in hemodialysis with artificial kidneys and peritoneal dialysis (blood purification through washing of the abdominal cavity with special dialyzing solutions).

In the summer of 1965, Congress appropriated \$3 million for the pursuit of a centrally directed program of research and development in chronic uremia, hemodialysis and artificial kidney development, utilizing predominantly a direct contract approach as well as increased research grant support. This program was located in the National Institute of Arthritis and Metabolic Diseases (NIAMD), the Institute which has major responsibility for urology and renal diseases research support.

It was considered important to undertake such a program through the utilization of the best possible consultative talent from both outside and within the National Institutes of Health. Accordingly, 23 outstanding authorities active in the field of chronic uremia and hemodialysis have been appointed as consultants. Among them are physicians who have led programs in artificial kidney centers, renal physiologists, physical chemists and membrane specialists, chemical and electronic engineers, and those rare, talented individuals who combine several of the above qualifications. These consultants are assisting in setting the trend of the new program and are reviewing the scientific merit and feasibility of contract proposals.

It was also considered important that the new program be undertaken in close cooperation with the activities of the Kidney Disease Control Program of the Bureau of Disease Prevention and Environmental Control (BDPEC), PHS. The latter activity is concerned largely with the actual demonstration of chronic dialysis in a community setting—both in specialized dialysis centers and, where feasible, in the homes of selected patients. Because of the closely interdigitating and interdependent nature of the NIH and BDPEC activities, both programs are in close and constant communication and work with a high degree of cooperation. There is a constant exchange of essential data between both programs and the respective staffs of these programs, with particular emphasis on program planning activities. It is hoped that this close cooperation will assure a maximum of benefit and prompt developmental advances in the artificial kidney field.

Outline of Program Plans

A thorough study of the state of the art made it apparent that no single specific direction could be followed which would exclude others which might be relevant. Several different types of artificial kidneys are in use at the moment,

and different methodologies are being advocated by the various workers in the field. Therefore, at this time, a variety of approaches in artificial kidney development are being supported. Once it becomes evident that one or more approaches show greater promise, efforts will be concentrated in these directions.

Problems of Highest Priority

The following are outstanding problems in dialysis toward which the new Artificial Kidney Program is directing immediate efforts:

1. Cannulas. The life and function of the permanently implanted cannulas are still limiting factors in successful dialysis.

2. Dialysis membranes. Though effective, the cellophane membranes currently in use may not be optimal. The possibility of using other, perhaps more selective membranes, must be explored.

3. Design of individual dialyzer units. Most dialyzers presently in use are cumbersome and costly to assemble and sterilize. There exists a dialyzer which utilizes a disposable dialysis-ultrafiltration "cartridge"; this cartridge is as yet too expensive for maintenance of chronic patients.

4. High requirement for professional personnel. This requirement is based on the medical nature of dialysis, but aggravated by problems 1, 2, and 3 above.

5. Lack of effectiveness data. No objective information has been obtained through well-controlled studies which permits a meaningful evaluation of the comparative effectiveness of the various dialysis methods and equipment currently in use. Such studies are facilitated by the existence of artificial kidney centers which provide the long-term patient care for this type of evaluation.

6. Undesirable symptoms frequently found in patients maintained by repeated dialysis:

- a) Anemia. On the average, one or more blood transfusions are needed per month per patient maintained in dialysis—with the attendant high risk of transfusion hepatitis.

- b) There is a significant incidence of peripheral neurological damage. This may be due to long-term effects of the semi-uremic state in surviving patients on repeated dialysis, or due to the dialysis procedure, *per se*.

- c) Pseudo-gout, secondary hyperparathyroidism, skeletal demineralization, and calcium deposition in joints and in the tissues throughout the body. The most recent findings involve calcium deposition in the cornea of the eye. Simultaneously, there is a tendency to decalcification of bone with resultant fractures produced by minor stresses.

Problems 1 through 4 are primarily responsible for the current high cost of dialysis, which averages \$10,000–\$14,000 per year in patients maintained by hospital dialysis on a twice-weekly schedule.

Immediate Program Activities

In brief the following are activities of primary concern of the Artificial Kidney Program.

1. Improvement of cannula materials, design and techniques so that current clotting and infection problems will be minimized. This involves redesign of cannula tips and bodies, development of a safer and simpler cannula coupling to the artificial kidney conduits, and the use of different cannula materials, including plastics permanently coated with anti-coagulants.

2. Development of improved or different membranes to permit a more selective and briefer dialysis. This involves the development and evaluation of tailor-made polymer membranes with controlled pore size and/or selective electrostatic properties, as well as mechanical modifications of the currently used cellulose sheeting, introduction of non-coagulating surface properties, and investigation of the metal binding characteristics of these new membranes.

3. More efficient, less cumbersome and less costly dialyzer design. This involves the improvement of new disposable dialysis-ultrafiltration units, development of more compact dialyzers requiring less blood for priming, overall redesign of machines to simplify and shorten assembly and sterilization, introduction to artificial kidney design of plastic materials with non-coagulating surfaces, and expansion of two new concepts in artificial kidney dialysis; (a) "hollow fiber" kidneys, and (b) "diafiltration"—blood purification primarily through ultrafiltration, followed by artificial reconstitution of the filtrable blood solutes.

4. Improvement of technical and hardware efficiency and safety of large hospital dialysis centers and of home dialysis units. In hospital centers, this involves development of improved automatic central fluid delivery systems, and fail-safe monitoring systems for all aspects of dialysis (blood leakage, temperature, ionic concentrations of fluids). In home dialysis units, this will also involve inclusion of a fail-safe mechanism in the dialyzing equipment in the event of accidental blood leakage—to permit unattended dialysis at night when patient and family are asleep.

5. A systems analysis of the entire present chronic dialysis effort and of its methodologies and equipment. This includes a meaningful comparative evaluation of the various facets, steps and methodologies involved in chronic dialysis, from selection of the patient through his medical evaluation once he is being maintained with chronic dialysis. This includes a registry of all patients presently maintained with the aid of artificial kidneys or peritoneal dialysis, which will permit a truly comparative evaluation of the effectiveness of equipment involved and various methodologies of treatment. This overall systems analysis will continue as a longitudinal study of these patients and will be undertaken as a cooperative effort with the community service programs in dialysis of the Kidney Disease Control Program, BDPEC, PHS; it will cover the various dialysis centers of the Veterans Administration Hospitals and all other centers or hospitals engaged in chronic dialysis and willing to cooperate.

Activities to Date

The Artificial Kidney-Chronic Uremia Program was mounted in record time with the activation of 24 carefully selected research and development contracts. These contracts were placed with universities, nonprofit research laboratories and industrial concerns, and constitute a broad spectrum approach to the major problems. These projects involve development of improved blood cannulas; evaluation and development of new polymer surfaces for artificial kidneys, cannulas and membranes which do not induce blood coagulation; design of more efficient, compact, and less costly dialyzer systems; development of a new concept of artificial kidney dialysis ("hollow fiber" or "capillary" kidneys); research on and development of absorption cartridges for blood purification; research on the utilization of ultrasonics to speed up dialysis in artificial kidneys; development of inexpensive disposable dialysis units; improvement and design of new automated centralized artificial kidney systems; improvement and design of new dialysis units with automated fail-safe mechanisms; design and development of a prototype for a portable artificial kidney; and many other related projects.

The portion of the program which is funded by extramural research grants complements closely the contract program described above, but is oriented more toward elucidation of clinical and fundamental biological problems related to the treatment of chronic uremia rather than toward hardware development. It involves studies on urea metabolism in uremic patients undergoing chronic dialysis; the undesirable side effects of chronic dialysis; the effectiveness of peritoneal dialysis in uremic patients; other novel approaches to blood purification in chronic kidney failure such as dialysis of a surgically relocated, isolated intestinal loop, lymph dialysis and dialysis in the home; and the nature of the biochemical defects in advanced uremia.

Thirty-two new research and development contract proposals have already been received in fiscal year 1967, and a substantial portion is in the process of being activated. These proposals embody unique, new approaches to artificial kidney methodology such as diafiltration (a novel concept in artificial kidney design); development of new types of permanent arteriovenous shunts; introduction and evaluation of novel materials for cannulas; development of additional types of capillary (hollow fiber) artificial kidneys; evaluation of a special protein restricted diet in the maintenance of uremic patients for whom chronic dialysis is deemed not feasible or unobtainable; isolation from dialysates and identification of the as yet unknown compound(s) which is (are) specifically responsible for the toxic symptomatology in uremia; and many other projects related to improved dialysis methodology or apparatus.

Periodic optimistic stories in the lay press notwithstanding, the ultimate cheap, simple, efficient and safe artificial kidney for home use does not yet exist, nor does it loom in the immediate future. The program as outlined above is expected to close existing gaps systematically and to deal with treatment complications. Simultaneously, it introduces new engineering developments into the maintenance treatment of uremic patients and, hopefully, will lead toward both better hardware and improved patient rehabilitation.

KIDNEY DISEASE RESEARCH

This past year, NIH-supported scientists have reported on a host of findings shedding light on several diseases involving the kidneys in order to better understand and hopefully prevent lesions that produce chronic renal failure. Some of these are uremia, cystinuria, glomerulonephritis, chronic pyelonephritis, the nephrotic syndrome, and hypertensive kidney disease.

Uremia

A low-protein intake is considered useful in the treatment of some patients with uremia because the failing kidney is no longer able to handle the excretion of urea and other nitrogen-containing products of protein metabolism in the body. The accumulation of these nitrogenous substances is believed to be responsible for some of the symptoms of uremia.

A group of Italian grantees has noted that chronic malnutrition is often present in patients with chronic renal failure. Severe protein depletion is often present because of breakdown of body protein resulting from dietary protein restriction, a poor food intake because of lack of appetite, and in some instances urinary protein losses as a result of kidney damage. Tissue wastage and resorption of bone matrix are reported to be frequent results of this severe protein depletion. Their dietary approach is aimed at restoring nitrogen balance without overloading the kidney's impaired nitrogen-excretion capabilities. They have employed diets containing from 18-25 grams of protein daily. If one of these diets fails to improve the patient's clinical condition, he is placed on a diet containing eight essential amino acids in amounts comparable to 8.5 grams of protein daily. These diets usually decreased blood nitrogen levels and produced clinical improvement, especially if a positive nitrogen balance could be maintained. Surprisingly, positive nitrogen balance was observed most frequently in patients on the essential amino-acid diet, which contained less total nitrogen than any of the others. Biochemical studies, using labelled urea in uremic patients on the low-nitrogen diets, indicated that some of the urea was being actively used in the synthesis of amino acids and protein. This might help to explain both the decreased azotemia and the improved clinical status of patients maintained on these diets.

In two separate and unrelated studies this past year, scientists have made significant contributions toward identifying and characterizing the toxic factors in uremia, essential to a better understanding of uremia and to improving hemodialysis apparatus and techniques.

Treatment of uremic patients with the artificial kidney or with peritoneal dialysis usually results in clinical improvement, suggesting that the small molecules removed by dialysis contribute to the symptoms of uremia.

Recent studies have suggested that catabolism of aromatic amino acids may lead to accumulation in the blood of intermediate products which may play a role in development of the toxicity of uremia. Now it has been shown that blood levels of aromatic amines (degradation products of aromatic amino acids) are markedly elevated in uremic patients, that these high levels are correlated with blood urea nitrogen levels, and that they may be reduced significantly by hemodialysis with an artificial kidney. These findings suggest that aromatic amines may play an important role in the toxicity of uremia.

Another investigator has demonstrated that protein synthesis, as measured by an *in vitro* amino acid incorporation system, is markedly impaired by two specific organic compounds isolated from hemodialysis fluid of uremic patients. It is suggested that this assay system may be of value in determining the toxic components present in uremic patients.

Cystinuria

Cystinuria, a disease characterized by urinary excretion of large amounts of cystine and other amino acids, and by formation of cystine stones in the urinary tract, is attributed to a hereditary transport defect in the kidneys. It has been suggested that cystinuria is due to more than one single inherited disease process, however, and evidence was recently obtained of an intestinal as well as a renal transport defect in this disorder. The reported findings indicate that cystinuria encompasses at least three biochemically and genetically distinct diseases.

In cystinuria, the kidneys excrete excess amounts of cystine. Since cystine is relatively insoluble, cystine crystals may be produced in the urine and may accumulate in the kidneys, frequently leading to the development of kidney stones. Conventional therapy, including increased fluid intake, alkalization of

the urine, and dietary restriction of methionine (a metabolic precursor of cystine), is not always effective.

It is known that penicillamine, a degradation product of penicillin, can markedly reduce urinary cystine excretion and prevent new stone formation by reacting with cystine to form the more soluble penicillamine-cystine. Recent work, both in Bethesda and by grantee scientists, now has shown that prolonged penicillamine therapy sharply reduces the size of existing cystine stones in the kidney and eventually dissolves them completely, without serious side effects.

Glomerulonephritis

NIH grantees have developed a new vaccine that may help prevent streptococcal infections, which frequently lead to rheumatic fever in children and may be the basis of glomerulonephritis in both adults and children. Although the majority of patients with glomerulonephritis recover, a significant number enter a chronic stage of kidney function impairment that ultimately progresses to chronic kidney failure.

The investigators have found their new vaccine to be safe and effective in extensive tests with mice, rabbits, and guinea pigs. In tests on nearly 50 adults, it has led to no serious reactions and has greatly increased the levels of antibodies against streptococcus organisms. Only further testing, particularly in children, will determine the effectiveness of the new vaccine in preventing streptococcal infections under ordinary conditions.

The investigators are working at present toward development of a vaccine that will be effective against the five or six types of streptococcus organisms that cause most infections in urban populations.

Chronic Pylonephritis

Chronic pyelonephritis, a slowly progressive kidney disease, is believed to result from the scarring effects of a pre-existing bacterial infection, as well as from persisting and recurring bacterial infections. The disorder apparently occurs more frequently in diabetic patients than in other groups, but there is little unanimity of opinion as to the actual frequency of the disease in diabetic and in nondiabetic groups.

Histologic and bacteriologic studies by an NIH grantee now have shown that there is essentially no correlation between the presence of positive urine cultures, positive renal tissue cultures, and the histologic diagnosis of chronic pyelonephritis in juvenile diabetic patients. These findings suggest that factors other than the continued presence of bacteria in the kidney may play a role in the pathogenesis of chronic pyelonephritis.

Nephrotic Syndrome

A long-term NIH-supported study of patients with the nephrotic syndrome has revealed that such individuals have an incidence of cancer ten times that of comparable population groups. This finding suggests a more than coincidental relationship between these diseases and indicates a need for careful and repeated screening of nephrotic patients for malignancies.

Of 101 patients with idiopathic nephrosis studied between 1953 and 1962, 11 (or 10.9 percent) were found to have malignant neoplasms anywhere in the body. The incidence of cancer in comparable population groups, paired according to age and sex, was one percent. None of the 11 patients had received anticancer therapy which might produce nephrosis. Renal amyloid involvement and renal vein thrombosis were also ruled out.

It is known that patients with neoplastic disease frequently develop antibody directed against their lesions, and there is evidence to indicate that membranous glomerulonephritis and lipid nephrosis are immunologic diseases. The high incidence of cancer observed in nephrotic patients in this study suggests a relationship between these diseases; materials released from neoplasms may act as antigens which subsequently cause the production of antigen-antibody complexes capable of inducing the characteristic renal lesions of the nephrotic syndrome.

Hypertensive Kidney Disease

Renal failure is a common cause of death in patients suffering from malignant hypertension. Recently, however, unequivocal evidence has been developed to show that modern blood pressure-lowering drugs are saving many lives by preventing renal damage as well as other fatal consequences of essential and malignant hypertension.

The known incidence of hypertension secondary to primary kidney disease and renovascular disease has increased progressively as improved methods have been

devised for diagnosing these ailments and for determining their various (and variable) effects in the body.

In renovascular hypertension, for example, the improved diagnostic acumen of physicians has enabled them to: (1) determine the location and extent of blood clots or atherosclerotic deposits obstructing renal blood vessels; (2) measure the effects of such obstructions on renal function in one or both kidneys; (3) choose that method of medical and/or surgical treatment most likely to benefit the patient; and (4) assess the results of therapy. Surgical reconstruction or bypass of affected vessels will often cure renovascular hypertension if the obstructions to bloodflow are confined to surgically accessible sites and if they have caused no permanent damage to the kidney. Otherwise, removal of one kidney will be required to control the hypertension resulting from kidney damage. If only one kidney is affected, prompt and accurate diagnosis followed by repair or removal of that kidney can often prevent hypertensive damage to the other kidney.

New Diagnostic Methods

An improved method of percutaneous renal biopsy, whereby a sample of kidney tissue for analysis is obtained with a special needle inserted through the patient's back, utilizes television-monitored fluoroscopic guidance of the needle to avoid potentially hazardous "blind" probing and to insure that tissue suitable for diagnosis is obtained. The scientists, who introduced the standard technique in 1952, state that their improved technique is now the method of choice for biopsy of the kidney.

Differentiating between acute and chronic renal failure in a uremic patient is often extremely difficult. This distinction is a very important one for the physician to make, however, since most medical centers are prepared to dialyze temporarily the patient with acute renal failure in the hope of eventual recovery, whereas only limited facilities exist for the chronic intermittent dialysis of patients with end-stage renal disease.

A grantee scientist has postulated that measuring the creatinine content of fingernail and toenail clippings would permit an estimation of the duration of renal failure and thus provide a basis for separating acute and chronic uremia patients. His reasoning was based on the premise that the creatinine content of the clipped free edge of the nail, which was formed many months earlier, would reflect blood creatinine concentration (hence the presence or absence of uremia) which was present at that time. Results of creatinine analyses of nail clippings from normal persons and patients with renal failure of varying degree and duration bear out his theory.

He found that patients with acute renal failure had normal nail creatinine concentrations, whereas those with chronic renal failure had elevated levels that correlated with the blood creatinine levels present several months before. Patients with chronic renal failure who regained normal kidney function after successful renal homotransplantation continued to have elevated nail creatinine levels until several months after blood levels returned to normal.

Scientific Communication Activities

In a major effort to meet the scientific communications problem in kidney disorders, and to acquaint the professional community with kidney research, the NIAMD has begun a vigorous program to expedite communication of pertinent laboratory and clinical findings. This past year, the Institute began publication of a new current-awareness bibliography on chronic kidney failure and on artificial kidney and dialysis methods covering relevant scientific papers from throughout the world. The publication, *Kidney Failure and Artificial Kidney Bibliography*, has been made available to interested investigators in this field and has been received enthusiastically. It was prepared to explore the possible utility, content and format of a new quarterly bibliography dealing with research and development in the area of chronic kidney failure and improvement of artificial kidney and dialysis methods.

Also developed this past year were an exhibit and an accompanying brochure to provide general information for present and prospective participants in the Artificial Kidney-Chronic Uremia Program. Both exhibit and brochure describe areas of emphasis in this program and the procedures and methods utilized for supporting research, applied research and development.

The Third International Congress of Nephrology was held this past year in Washington, D.C., and was sponsored primarily by the National Heart Institute and the National Institute of Arthritis and Metabolic Diseases. Principal ob-

jective of the Congress was to promote the international exchange of scientific information on activities in the basic and clinical sciences relating to the kidney. Over 2,000 scientists from some 44 countries attended the Congress.

Kidney Disease: Summary

Research conducted or supported by the National Institute of Arthritis and Metabolic Diseases, the National Institute of Allergy and Infectious Disease and the National Heart Institute has added considerably to the understanding and treatment of chronic kidney disease. Latest morbidity and mortality figures due to kidney diseases reflect the acute need for continuing and intensifying research efforts in this area.

Significant advances have been made in research on the prevention, diagnosis and treatment of the varying disease processes which attack the kidneys. Investigators delineating the basic abnormalities of the chronic uremic state laws have contributed considerably to our understanding of the condition.

Increased understanding of the fundamental disease processes has brought with it a significant improvement in treatment methods. Kidney transplantation at present shows promise of becoming a major treatment modality for chronic kidney failure. Immunological host-transplant incompatibility remains the major difficulty to successful kidney transplantation today. Steps are being taken to overcome this problem through a tissue-typing program (matching cell antigens of recipient and donor) and through studies for more effective and less toxic agents to control the immune response.

Until kidney transplantation becomes a practical reality, blood purification through an artificial kidney (chronic hemodialysis) is the only hope for survival for the majority of patients with chronic kidney disease. Moreover, a number of patients are unable to receive or successfully maintain a kidney graft due to physical, immunological, or financial reasons. Major efforts have been made in the direction of developing simpler, more efficient, more compact, and less costly artificial kidneys, allowing for the effective treatment of an increasing number of patients.

As an alternative or adjunctive method of therapy for patients with chronic kidney failure, especially those less seriously impaired, the use of a special, low-protein diet has shown considerable promise.

Investigations such as those outlined above have added much to our ability to cope with and prevent kidney failure. They have also indicated areas for new research efforts in order that more widespread and more permanent control of this group of diseases may be accomplished.

AREAS WHERE ADDITIONAL SUPPORT WOULD BE USEFUL

Senator HILL. Doctor, let me ask you this: You have given us stories about some very promising programs, very interesting. Are there any programs that are particularly promising at this time that in your opinion are not getting adequate support?

Dr. WHEDON. There are several areas in which further support, additional support, would be particularly useful. I am thinking particularly in the area of research grants. I mentioned a few minutes ago, Senator, our need to learn much more about chronic kidney disease by fundamental and clinical studies and I described the importance of doing this ahead of or before developmental work, to enable us to make real progress in the artificial kidney program, additional progress to that gratifying amount that we have made thus far.

The other area of particular interest at this time is gastrointestinal diseases.

I should mention that through the particular support of this committee last year we showed some particularly promising activity in the field of arthritis. We are now getting much deeper into the matter of the relationship of immune processes to the disease to the point where there is real expectation that we will see results from the use of immunosuppressive drugs and from cytotoxic drugs. Now, we are still

in the early stages of work in this area, but we are paying particular attention to it and will be attempting to support projects in this area.

Then I mentioned in diabetes we are making particularly promising progress with respect to fundamental aspects, learning more about the mechanism of action of insulin and we hope to learn more in a fundamental direction by means of the importance of the thickened basement membrane in capillaries. This is not only important in the detection of the disease but in following the course of the disease.

So, in reply to your question, I would emphasize particularly chronic kidney disease and gastroenterology, but in addition we are now moving very gradually forward in our collaborative activities toward supplying investigators with particular special materials and biological preparations which will be helpful in research, particularly with new, pure hormone preparations. Then we feel that there is a modest lack of adequate support in terms of positions with respect to our artificial kidney and collaborative activity and also in our direct research.

DEFICIENCIES IN RESEARCH AND TRAINING GRANT PROGRAMS

Senator HILL. What deficiencies do you expect to have at the end of this present fiscal year in your research grants and in your training grant programs?

Dr. WHEDON. Senator Hill, in our research grant activities we will have very sizable deficiencies. The study sections have approved projects which we are unable to fund to the extent of \$6.7 million. In training grants the situation is not so serious but we here, in turn, will have deficiencies of between \$300,000 and \$500,000.

Senator HILL. In your training grants?

Dr. WHEDON. Yes, sir.

Senator HILL. How many trainees would that affect, prospective trainees, so to speak?

Dr. WHEDON. I would estimate that this would be in the neighborhood of 18 to 25 trainees as a minimum. I am doing this calculation rapidly in my head, but the numbers I have cited would be at the rate of only one trainee per training grant. Obviously a training grant is much efficient if it can train more than that, so it might well affect as many as 30 to 40 trainees.

NUMBER OF TRAINEES

Senator HILL. How many trainees have you had so far this year?

Dr. SHANNON. Senator Hill, we might supply that for the record.

Senator HILL. All right, you supply that for the record.

(The information follows:)

The National Institute of Arthritis and Metabolic Diseases currently supports 850 trainees.

NEEDS OF NEW MEDICAL SCHOOLS

Dr. WHEDON. I would add that this area is particularly important for reasons that Dr. Kreshover alluded to. I am thinking particularly of the needs of our new medical schools for full-time academic faculty; the places where these people really get the training that makes them ideal and most efficient teachers is in the research training grants and fellowships supported by this Institute and by others, of course.

Senator HILL. And you have to have these people if the new medical schools are going to do their job; is that right?

Dr. WHEDON. Absolutely true. I think this point has to be borne in mind in trying to make plans for each advance we expect to make in various programs.

DR. BAYNE-JONES STUDY

Senator HILL. What year did Dr. Bayne-Jones make his study, Dr. Shannon?

Dr. SHANNON. That was 1955.

Senator HILL. About 12 years ago.

We had brought home to us the compelling need for new medical schools which of course means more trained efficient personnel.

Dr. SHANNON. I was off by a few years. I think it was 1957.

Senator HILL. That would be 10 years anyway. That is a decade.

You have given us some challenging testimony. I don't think the NIH has provided more interesting, informative, and challenging testimony than it has this year. You certainly have done your part. Dr. Shannon kicked it off.

Is there anything you would like to add, Doctor?

RESEARCH IN ARTHRITIS

Dr. WHEDON. Senator, only to tell you, as I alluded to earlier, that we are particularly grateful to the special assistance provided by this committee last year in enabling us to devote \$1 million to research in arthritis. I have already alluded to the importance of studying immune processes with regard to this disease. I want to tell you that we have initiated a program particularly designed to support studies in the clinical aspects of arthritis. We feel that it is particularly important to be geared up to make precise and exact evaluations of the effects of the new compounds which are coming along. There have been many hopes raised about some of these drugs for arthritis treatment in the past year. Also, some cold water was thrown on some of them. But I would like to caution you and anyone else who is paying attention to this field that the final decision on the effectiveness and safety of a compound is not made within a matter of a few months or even within 1 year. It takes time. So that one should follow these fluctuations in enthusiasm and delusion with considerable caution and should wait for more extensive and careful evaluations to be carried out. This is one of the things we are particularly doing with these special funds in arthritis.

STUDIES OF EFFECTS OF ENDOCRINE HORMONES

Then the other area in which we received particular support is in studies of the effects of endocrine hormones. As I alluded to in diabetes, we are moving into an area in which we are being able to get closer to the fundamental aspects of the biochemical processes of the body and to the way in which the endocrine hormones regulate and modulate in a very purposeful way these most important biochemical processes. This is being actively pursued by us.

Senator HILL. As I said, you have brought us a most interesting, informative, and challenging statement, Doctor. We deeply appreciate your statement, and all the work that you and your Institute are doing. We want to thank you very much.

Dr. WHEDON. Thank you, sir.

NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS

STATEMENT OF DR. RICHARD L. MASLAND, DIRECTOR, NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS; ACCOMPANIED BY DR. ELDON L. EAGLES, ASSISTANT DIRECTOR, NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS; ECKART WIPF, EXECUTIVE OFFICER, NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS; ROBERT L. SITHENS, BUDGET OFFICER, NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS; DR. JAMES A. SHANNON, DIRECTOR, NATIONAL INSTITUTES OF HEALTH; RICHARD L. SEGGEI, EXECUTIVE OFFICER, NATIONAL INSTITUTES OF HEALTH; LELAND B. MAY, ACTING FINANCIAL MANAGEMENT OFFICER, NATIONAL INSTITUTES OF HEALTH; DR. LEO J. GEHRIG, DEPUTY SURGEON GENERAL; CHARLES MILLER, CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS

For expenses necessary to carry out the purposes of the Act relating to neurology and blindness, **[\$116,296,000]** \$128,633,000.

Amounts available for obligations

	1967	1968
Appropriation.....	\$116, 296, 000	\$128, 633, 000
Transferred to "Operating expenses, Public Buildings Service, General Services Administration".....	-12, 000	0
Comparative transfer to other accounts.....	-558, 000	0
Total.....	115, 726, 000	128, 633, 000

1912 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants.....		\$71,496,000		\$84,416,000		+12,920,000
General research support grants.....		(6,288,000)		(8,348,000)		(+2,060,000)
Scientific evaluation and planning.....		(75,000)		(75,000)		0
Categorical clinical research centers.....		(3,150,000)		(3,150,000)		0
Specialized research centers.....		(800,000)		(800,000)		0
Fellowships.....		3,675,000		3,805,000		+130,000
Training.....		18,633,000		18,780,000		+147,000
Direct operations:						
Laboratory and clinical research.....	346	8,485,000	366	9,997,000	+20	+1,512,000
Collaborative research.....	228	5,565,000	230	5,980,000	+2	+415,000
Biometry, epidemiology, and field studies.....	80	2,268,000	80	2,305,000	0	+37,000
Training activities.....	3	71,000	3	72,000	0	+1,000
Review and approval of grants.....	109	2,180,000	109	2,389,000	0	+209,000
Program direction.....	30	871,000	30	889,000	0	+18,000
Total obligations.....	796	113,244,000	818	128,633,000	+22	+15,389,000
Unobligated balance, reserve.....		2,482,000				-2,482,000
Total, obligations and balance.....	796	115,726,000	818	128,633,000	+22	+12,907,000

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	796	818	+22
Full-time equivalent of other positions.....	60	60	0
Average number of all employees.....	795	813	+18
Personnel compensation:			
Permanent positions.....	\$5,647,000	\$5,830,000	+\$183,000
Positions other than permanent.....	390,000	395,000	+5,000
Other personnel compensation.....	95,000	102,000	+7,000
Total personnel compensation.....	6,132,000	6,327,000	+195,000
Personnel benefits.....	547,000	560,000	+13,000
Travel and transportation of persons.....	390,000	421,000	+31,000
Transportation of things.....	122,000	132,000	+10,000
Rent, communications, and utilities.....	213,000	235,000	+22,000
Printing and reproduction.....	117,000	177,000	+60,000
Other services.....	1,094,000	1,156,000	+62,000
Project contracts.....	3,494,000	3,950,000	+456,000
Payments to "National Institutes of Health management fund".....	5,428,000	6,218,000	+790,000
Supplies and materials.....	1,184,000	1,487,000	+303,000
Equipment.....	721,000	971,000	+250,000
Grants, subsidies, and contributions.....	93,804,000	107,001,000	+13,197,000
Subtotal.....	113,246,000	128,635,000	+15,389,000
Deduct quarters and subsistence charges.....	2,000	2,000	0
Total obligations by object.....	113,244,000	128,633,000	+15,389,000

Summary of changes

1967 enacted appropriation.....	\$116,296,000
Proposed supplementals:	
Unobligated balance, reserve.....	-2,482,000
Comparative transfers to other accounts.....	-558,000
Transfer to "Operating expenses, Public Buildings Service".....	
General Services Administration.....	-12,000
1967 total estimated obligations.....	113,244,000
1968 estimated obligations.....	128,633,000
Total change.....	+15,389,000

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1913

	Base		Changes to base	
	Posi- tions	Amount	Posi- tions	Amount
INCREASES				
A. Program:				
1. Research grants.....	0	\$71,496,000	0	\$12,920,000
2. Fellowships.....	0	3,675,000	0	130,000
3. Training.....	0	18,633,000	0	147,000
4. Laboratory and clinical research.....	346	8,485,000	20,	949,000
5. Collaborative research and development.....	228	5,565,000	2	394,000
6. Biometry, epidemiology, and field studies.....	80	2,268,000	0	31,000
7. Training.....	3	71,000	0	1,000
8. Review and approval.....	109	2,180,000	0	26,000
9. Program direction.....	30	871,000	0	15,000
Subtotal, program increases.....			22	14,613,000
B. Payment to "National Institutes of Health manage- ment fund" for centrally furnished services:				
1. Laboratory and clinical research.....		3,753,000		570,000
2. Collaborative research and development.....		309,000		25,000
3. Biometry, epidemiology, and field studies.....		109,000		7,000
4. Review and approval.....		993,000		184,000
5. Program direction.....		260,000		4,000
Subtotal, payment to management fund.....				790,000
Total program increases.....			22	15,403,000
DECREASES				
1 less day of pay (total).....				-14,000
Total net changes requested.....			+22	+15,389,000

EXPLANATION OF CHANGES

Research grants.—The net increase of \$12,920,000 includes \$10,860,000 for support of the regular programs and \$2,060,000 for general research support grants.

Fellowships.—The increase will be for increased stipend cost and a program increase of 7 postdoctoral awards. The total dollar increase is \$130,000.

Training grants.—The increase of \$147,000 will provide continued support of the graduate training grants program in the various fields of neurological and sensory disorders.

Laboratory and clinical research.—The program increase of \$942,000 will provide supporting costs for the new building and the support of 20 positions required for the expanded programs of intramural research.

Collaborative research and development.—The program increase of \$390,000 will support two new positions and continued research in the fields of head injury, slow latent and temperate viruses and other degenerative disorders of the central nervous system.

Biometry, Epidemiology and field studies.—The increase of \$30,000 will provide additional logistic support for the programs established in 1967.

Review and approval of grants.—The increase of \$25,000 will provide continued support of the staff required for the review and analysis of the grants programs of this Institute.

Program direction.—The increase of \$14,000 will provide for additional support of administrative staff in the Office of the Director.

	1967 estimate	1968 estimate	Increase or decrease
Research projects.....	\$61,103,000	\$71,963,000	+\$10,860,000
Special programs.....	10,393,000	12,453,000	+2,060,000
Total research grants.....	71,496,000	84,416,000	+12,920,000

INTRODUCTION

The National Institute of Neurological Diseases and Blindness supports research grant programs which include research projects, research program projects, outpatient clinical research projects, clinical research centers, and cerebrovascular and head injury planning grants. The primary objectives of these diversified types of grants are the identification, stimulation, and support of essential research on problems related to the diagnosis, treatment and prevention of diseases of the nervous system, the eye and the ear, and human communication. Some of these diseases are among the major causes of death in the United States (stroke, head injury) or are common causes of permanent disability (epilepsy, paralysis, blindness, deafness, loss of speech). They include diseases of the young (cerebral palsy, epilepsy, aphasia, paraplegia, retinal detachment), and of the aged (stroke, brain tumor, parkinsonism, glaucoma, cataract, otosclerosis). The research grant program of this Institute is extending the crucial role already played in providing the research information, technology, and instrumentation required for a nationwide effect against these major causes of death and disability.

PROGRAM PLANS FOR 1967 AND 1968

The budgets for 1967 and 1968 continue to reflect the recently authorized cost sharing arrangements for new and renewal research grants. This plan considers the full direct and indirect costs of the project in arriving at the federal and non-federal share.

In fiscal year 1967, approximately 1,531 research projects totalling \$61,103,000 will be awarded by the Institute. With the funds requested for 1968, the Institute will award approximately 1,674 research projects totalling \$71,963,000.

Of the total increase for 1968, \$11,835,000 will be used to meet the rising costs of on-going or non-competing research projects. This research will continue the emphasis in fields of epilepsy, vision, brain injury, speech and hearing, and stroke. There are four major mechanisms of grant support utilized by the Institute to accomplish its research program objectives; these are:

1. *Research project grants*

In fiscal year 1967, special emphasis is being given to studies of head injury, epilepsy, glaucoma, stroke, and deafness. In addition, national cooperative programs in the planning stage in 1966 were launched on a pilot basis in two major research areas: (1) the natural history, diagnosis and treatment of epilepsy; and (2) the prevention of stroke in patients with high blood pressure. The program of outpatient clinical research units which was launched in the areas of vision and of human communications (speech and hearing) will be extended to the cerebrovascular area in 1968. Much is yet to be learned regarding the care of ambulatory patients with paralysis and/or aphasia due to cerebrovascular damage.

2. *Categorical clinical research centers and program projects*

Neurological and sensory disease clinical research centers and program projects provide the research resources and support for selected multidisciplinary clinical research teams engaged in coordinated attacks on the major problems of death and disability involving the nervous system or special senses of vision or hearing. These research teams are organized on either an institutional or multi-institutional (regional) basis and enable investigators in key disciplines to assist each other in developing and testing the new principles and methods which must be perfected to stop the continuing increase and progression of dreaded disorders such as stroke, epilepsy, head injury, blindness, and deafness. During 1967, three additional centers were initiated in the brain research area, two in the areas of stroke, one in the eye research area, and one in the deafness and human communication area, making a total of 50 active clinical research centers. An additional five centers focusing on major clinical areas are ready to be launched in fiscal year 1968.

3. *Outpatient clinical research units*

The program of outpatient clinical research units originally launched in two selected areas, disorders of vision and disorders of hearing, speech and human communication, has been extended to include cerebrovascular disorders. In 1968 eleven additional outpatient clinical research projects will be initiated, three on disorders of vision, four on disorders of hearing and human communication, and four on cerebrovascular disorders.

4. *Specialized Research Centers (Planning grants)*

Clinical center planning grants are awarded for planning the development of additional clinical research centers on important problems of national need. During 1967, planning grants for head injury research as a result of brain damage were initiated on a pilot basis as well as one additional planning grant for Cerebrovascular Centers. An additional six planning grants in head injury research and two in the cerebrovascular area will be initiated in 1968. In research fields of great clinical significance such as head injury and cerebrovascular disease, the Institute can help to mobilize the research resources of the nation to reduce and eventually overcome the consequences of these disabling afflictions by assisting in the development of research teams in newly evolving research centers throughout the nation.

During fiscal year 1968, special emphasis will be given to the following areas of neurological and sensory disease research:

a. Vision

In the United States over 400,000 people are legally blind, one million have visual impairment so severe they cannot read a newspaper, 300,000 are handicapped to the extent they cannot work, and 3,500,000 have only partial vision. In view of the magnitude of the problem, the Institute is making every effort to develop a complete program for eye research and training to determine the cause, prevention, treatment, and remediation of blindness and visual disorders.

In November 1964 an ad hoc Subcommittee on Vision and Its Disorders was established on the recommendation of the NANDB Council. The Subcommittee and its task forces spent two years in an effort to "review the present status of knowledge about the major causes of blindness and visual disability and to summarize the most pressing problems for investigation as well as the most exciting research leads." The report of that expert panel is now available as a basis for the planning and development of additional national activities in this important area. The Institute has now established a permanent Subcommittee on Vision and Its Disorders and is considering the development of a Teacher-Investigator Award Program to strengthen the teaching and clinical investigative aspects of ophthalmology. Some 24 other recommendations also are under consideration. Volume II of the report, containing scientific status papers which provide a comprehensive scientific review of the fields of vision and blindness, is now being made available to the scientific community. Implementation of these recommendations will enlarge and strengthen the program which the National Institute of Neurological Diseases and Blindness has developed for eye research and training.

In addition to the program of individual research projects for the study of blindness, the Institute also supports eye clinical research centers. These centers mobilize a national broad scale attack on visual disorders through the development and application of multidisciplinary approaches to these complex problems.

Support is now being provided for 9 clinical research centers for blindness and visual disorders, each concentrating on special clinical problems such as, cataract, glaucoma, disorders of the cornea, infections of the eye, disturbances of eye movement, but retaining a broad approach to the overall problem of blindness. An additional 3 centers are providing information about the fundamental mechanisms through which light impulses are converted to nervous energy and transmitted to the brain for interpretation. Thus, they are broadly concerned with sensory and perceptual disorders.

The visual outpatient clinical research program initiated on a pilot basis in 1966 and 1967 will be expanded. Heretofore, the participation of outpatients with visual disorders in research has been limited by inadequate facilities. Since a large proportion of individuals with vision problems are treated on an outpatient basis, this meant that valuable clinical material was lost to research. It is already clear that the visual outpatient clinical program will be highly successful in correcting this situation as well as in providing focal points for improved clinical research in all geographic areas of the nation.

b. Head Injury

Head Injury Clinical Research Centers are complex, interinstitutional, interparental or interdisciplinary programs which often require careful planning involving a major investment in time and effort of both clinical investigators and institution officials. Many institutions found it difficult to prepare proposals for Clinical Research Centers in this area without financial assistance for adequate planning. Thus, a program of specialized center awards (planning grants)

for Head Injury Clinical Research Centers was initiated in 1967. This program will be expanded in 1968. Pilot programs, which will already have been started with planning grants, will be expanded and converted into Clinical Research Centers. These Centers will concentrate their efforts on various aspects of the head injury problem such as its epidemiology, the physical forces involved in causing head injury, improved diagnostic and therapeutic procedures, the physiological consequences of head injury, the function and structure of the blood-brain barrier, and the problems of cerebral edema.

c. Stroke

Stroke is one of the most common causes of death and not infrequently strikes at a time when the individual is at the peak of his career. For those who do not die, the disease usually means a life of physical disability and mental incapacity. Aphasia, paralysis, and incontinence are the too often tragic consequences of stroke.

As in the case of all medical problems, prevention is the most desirable objective. This requires the development of tests and methods to detect diseases and narrowed blood vessels of the brain in time to prevent complete obstruction. Ways to re-open clogged cerebral vessels and to replace vessels which are diseased beyond repair must be devised and improved; methods for improving collateral circulation to areas not receiving adequate blood are being identified.

The research clinic, which actually works with patients of this kind year after year, is the site to which we must look for important developments in this area. Sixteen clinical research centers for stroke research are presently being supported in 1967, of which 7 are in the planning stages. With the assistance of planning grants, efforts will continue to encourage the development of stroke clinical research centers in additional geographic areas and in institutions which have clinical material that otherwise would not be utilized, but which lack the extensive financial resources required to organize one of these complex centers without assistance. Also, support for outpatient clinical research centers in this area, which was begun in 1967, will be extended in 1968. This is especially important because these ambulatory patients frequently are the best source of information on the early diagnosis of stroke and on the mechanisms that can restore an adequate functional state.

These clinical research centers and outpatient units constitute the main thrust of the Institute's attack on the stroke problem. Much basic laboratory research is still required and needs to be supported; the clinical research center program, however, provides the means by which laboratory findings about the causes, the epidemiology, the treatment, and the prevention of stroke are translated into clinically-used tools.

d. Disorders of Human Communication (Hearing, Language, and Speech)

An ad hoc Task Force on Disorders of Human Communications had been organized by the Institute to review the present state and the problems of communicative disorders and to advise the Institute in regard to needed future programs.

Communicative disorders are somewhat unusual in that there is a growing feeling on the part of experts that many aspects of such disorders can be corrected primarily, if not solely, by early treatment and education. For this reason, it is especially important that these disorders be detected and diagnosed as early as possible before they become firmly established and corrective measures will be limited in effectiveness. The urgency of early detection makes the participation of medical research and public health personnel of the greatest importance.

For this reason, it is especially necessary that clinical research centers be established and strengthened to provide for research on the diagnosis and treatment of these diseases and for the training of professional personnel. As indicated above, these centers must be multidisciplinary and should include investigators in as many aspects of human communication as possible. The Institute looks primarily to these centers for the major developments in the detection, diagnosis, therapy, and natural history of communicative disorders. To a greater degree than in almost any other field, the individual with a communicative disorder is likely to be an outpatient. Therefore, this was one of the first areas to which the concept of outpatient clinical research units was applied. This activity will be gradually expanded in order that full advantage be taken of the clinical material available in every region of the country.

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e. Muscular Dystrophy

Muscular dystrophy is a very discouraging group of diseases in which the muscles gradually waste away. Available treatments are so poor that many physicians feel any kind of treatment at the present time is useless. Perhaps the saddest aspect is that one type of the disease occurs in children of early school age, particularly boys. Spontaneous temporary remissions make it very difficult to evaluate the effect of therapy accurately.

Several years ago a group of investigators from several institutions requested support for a cooperative study to identify the metabolic and genetic defects which are basic to these disorders. However, the requests were disapproved because they would not meet the strict criteria for a carefully controlled study. Following this, a small technically expert steering committee was appointed which received modest grant support to conduct workshops to develop an adequate protocol. After two years of painstaking work and efforts to resolve crucial problems of research design and techniques, the committee is now formulating a critical research plan which can be used successfully by a small group of cooperating institutions. It is expected that grants to support this cooperative study of muscular dystrophy will be activated in 1968.

Research grants program analysis

Fields	1967 estimate	1968 estimate	Increase or decrease
Chronic neurological disorders of childhood	\$8,690,000	\$9,554,000	+\$864,000
Chronic neurological disorders of aging	2,066,000	2,545,000	+479,000
Cerebrovascular disorders	4,834,000	5,709,000	+875,000
Epilepsy and related paroxysmal disorders	2,568,000	3,095,000	+527,000
Sclerosing disorders	2,930,000	3,563,000	+633,000
Muscular and neuromuscular disorders	3,125,000	3,693,000	+568,000
Infectious neurological disorders	310,000	474,000	+164,000
Accident and injury	1,889,000	2,333,000	+444,000
Tumors of the nervous system	894,000	998,000	+104,000
Other neurological disorders	11,301,000	13,133,000	+1,832,000
Disorders of vision	11,900,000	14,039,000	+2,139,000
Disorders of hearing and equilibrium	5,051,000	6,164,000	+1,113,000
Disorders of speech and other higher CNS functions	1,685,000	2,095,000	+410,000
Other sensory disorders	2,260,000	2,673,000	+413,000
Noncategorical	1,600,000	1,895,000	+295,000
Subtotal	61,103,000	71,963,000	+10,860,000
General research support grants	6,288,000	8,348,000	+2,060,000
Categorical clinical centers	3,150,000	3,150,000	
Planning grants	800,000	800,000	
Scientific evaluation and planning	155,000	155,000	
Total research grants	71,496,000	84,416,000	+12,920,000

Distribution of research grants

	1967 number	Estimate amount	1968 number	Estimate amount	Increase or decrease	
					Number	Amount
1. Noncompeting continuations	999	\$31,578,000	1,160	\$43,413,000	+161	+\$11,835,000
2. Competing projects	532	22,559,000	514	25,450,000	-18	+2,891,000
3. Supplementals	(213)	6,966,000	(208)	3,100,000	(-5)	-3,866,000
4. Subtotal regular program	1,531	61,103,000	1,674	71,963,000	+143	+10,860,000
5. General research support grants	0	6,288,000	0	8,348,000	0	+2,060,000
6. Scientific evaluation	(5)	155,000	(5)	155,000	0	0
7. Categorical clinical research centers	(50)	3,150,000	(55)	3,150,000	+(5)	0
8. Specialized research centers	(7)	800,000	(8)	800,000	+(1)	0
9. Total research grants	1,531	\$71,496,000	1,674	\$84,416,000	+143	+\$12,920,000

Fellowships

	1967 estimate	1968 estimate	Increase or decrease
Total fellowships	\$3,675,000	\$3,805,000	+\$130,000

1918 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

INTRODUCTION

The research fellowship programs of the NINDB include postdoctoral fellowships and research career awards. These programs provide the financial support necessary to make it possible for scientists and scientist-clinicians to become qualified for research on problems of disease of the nervous system, vision, hearing, and human communication. A group of scientists highly skilled in diversified fields such as neuroanatomy, neurophysiology, neuropathology, audiology, biophysics, ophthalmology, and otolaryngology is essential for the needed advances in solving these problems. This research group must become skilled in the use of the most up-to-date techniques and instrumentation and in their application to medical research. The fellowship programs have proven effective in meeting these objectives. A significant proportion of the research scientists whose projects are now being supported by NIH, are men who received training under this program.

PROGRAM PLANS IN 1967 AND 1968

POSTDOCTORAL FELLOWSHIPS

Postdoctoral fellowships provide the financial support enabling young scientists having just completed doctoral training to obtain the advanced, specialized training required for investigation of diseases of the nervous system, vision, hearing, and human communication.

In 1968, the postdoctoral fellowship program is expected to be maintained at approximately the same level as in 1967, with continuing emphasis on training in scientific fields relating to epilepsy, head injury, cerebrovascular disease, vision, and human communication.

CAREER DEVELOPMENT AWARDS PROGRAM

Career Development Awards assure salary support over a 5-10 year period for selected young scientists and scientist-clinicians who have completed their research training and who have shown outstanding aptitude for research. It provides them with an opportunity to develop a chosen line of research and to become established as independent investigators. These awards are particularly important for the well-trained scientist-clinician, who is thus enabled to devote himself completely to the development of the academic career for which he has had long years of clinical and research training. Many individuals of this type are needed, who combine firsthand knowledge of neurological and sensory disease with extensive knowledge in one or more of the basic science areas. Of the total increase requested for the Fellowship program for the National Institute of Neurological Diseases and Blindness, 81 percent or \$105,000 will be applied to the career development program.

Distribution of fellowships

	1967 estimate		1968 estimate		Increase or decrease	
	Num-ber	Amount	Num-ber	Amount	Num-ber	Amount
1. Continuations:						
(a) Noncompeting.....	89	\$2,009,000	104	\$2,442,000	+15	+\$433,000
(b) Competing.....	45	535,000	49	571,000	+4	+36,000
2. Supplementals.....	(11)	9,000	(12)	10,000	(+1)	+1,000
3. New grants.....	128	1,122,000	111	782,000	-17	-340,000
4. Total fellowships.....	262	3,675,000	264	3,805,000	+2	+130,000

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Fellowships (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Num- ber	Amount	Num- ber	Amount	Num- ber	Amount
1. Postdoctoral.....	137	\$900,000	144	\$900,000	+7	0
2. Research career:						
(a) Career.....	13	350,000	13	375,000	0	+\$25,000
(b) Development.....	112	2,425,000	107	2,530,000	-5	+105,000
3. Total fellowships.....	262	3,675,000	264	3,805,000	+2	+130,000

Training grants

	1967 estimate	1968 estimate	Increase or decrease
Total training grants.....	\$18,633,000	\$18,770,000	+\$147,000

INTRODUCTION

The Training Grants program of the National Institute of Neurological Diseases and Blindness provides funds to institutions to aid in establishing, improving, or expanding training programs to prepare scientists and scientist-clinicians for careers in research and academic medicine, and for careers in organized community service and public health in the disciplines relevant to the nervous system, the neuromuscular system, vision, hearing, and human communication. Training programs in the area of cerebrovascular disease also have the important objective of preparing clinicians for careers in the clinical aspects of cerebrovascular disease.

In 1967 the Institute expects to support approximately 296 training programs, and through these programs provide training for about 1,790 trainees and special fellows.

The impact of the training programs to date has resulted in nearly tripling the number of scientists and scientist-clinicians devoted to teaching and research in these critical areas; however in terms of meeting even a minimum level of national needs, the program is just beginning to achieve its objectives.

The responsibility for future advances in understanding, preventing, and treating successfully the neurological and sensory disorders rests essentially with this group of scientists and scientist-clinicians who are trained as leaders in teaching and research.

Program analysis

Fields	1967 estimate	1968 estimate	Increase or decrease
1. Neurology.....	\$4,937,000	\$4,734,000	-\$203,000
2. Ophthalmology.....	2,997,000	2,997,000	0
3. Otolaryngology.....	2,627,000	2,627,000	0
4. Auditory physiology.....	75,000	75,000	0
5. Communicative disorders.....	255,000	255,000	0
6. Medical audiology.....	210,000	210,000	0
7. Neuroanatomy.....	238,000	238,000	0
8. Neurochemistry.....	202,000	202,000	0
9. Neuropathology.....	670,000	670,000	0
10. Neuropharmacology.....	250,000	250,000	0
11. Neurophysiology.....	646,000	646,000	0
12. Neuroradiology.....	214,000	214,000	0
13. Neurosurgery.....	508,000	508,000	0
14. Experimental neurosurgery.....	107,000	107,000	0
15. Ophthalmic basic science.....	203,000	203,000	0
16. Otolaryngology and audiology.....	178,000	178,000	0
17. Otological pathology.....	86,000	86,000	0
18. Pediatric neurology.....	458,000	458,000	0
19. Medical neurology and public health.....	43,000	43,000	0
20. Sensory physiology.....	177,000	177,000	0
21. Speech pathology.....	132,000	132,000	0
22. Speech pathology and audiology.....	135,000	135,000	0
23. Vision psychophysiology.....	10,000	10,000	0
24. Cerebrovascular.....	100,000	450,000	+350,000
25. Scientific evaluation and planning.....	175,000	175,000	0
Total, graduate training grant program.....	15,633,000	15,780,000	+147,000

Traineeships—Program analysis

Fields	1967 estimate	1968 estimate	Increase or decrease
1. Neurology.....	35	28	-7
2. Ophthalmology.....	27	26	-1
3. Otolaryngology.....	5	5	0
4. Audiology-speech pathology.....	4	4	0
5. Biochemistry.....	8	8	0
6. Biophysics.....	7	7	0
7. Neuroanatomy.....	9	9	0
8. Neurochemistry.....	4	4	0
9. Neurocytology.....	6	6	0
10. Neuroendocrinology.....	5	5	0
11. Neuropathology.....	16	15	-1
12. Neuropharmacology.....	7	7	0
13. Neurophysiology.....	21	20	-1
14. Neuroadiobiology.....	14	14	0
15. Neurosurgery.....	3	3	0
16. Ophthalmic pathology.....	13	13	0
17. Pediatric neurology.....	49	49	0
18. Physiological psychology.....	3	3	0
19. Sensory physiology-pathology:			
Vision.....	5	5	0
Otolaryngology.....	3	3	0
20. Speech and hearing mechanisms.....	4	4	0
21. Virology-immunology.....	7	7	0
22. Cerebrovascular.....	40	43	+3
Total.....	295	288	-7

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Distribution of training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Continuations:						
(a) Noncompeting	207	\$10,152,000	209	\$12,100,000	+2	+\$1,948,000
(b) Competing	166	4,932,000	166	4,352,000	0	-580,000
2. Supplementals	(45)	341,000	(35)	213,000	(-10)	-128,000
3. New grants	218	3,033,000	190	1,940,000	-28	-1,093,000
4. Scientific evaluation and planning	(5)	175,000	(5)	175,000	0	0
5. Total training grants	591	18,633,000	565	18,780,000	-26	+147,000

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Graduate	296	\$15,458,000	277	\$15,605,000	-19	+\$147,000
2. Traineeships	295	3,000,000	288	3,000,000	-7	0
3. Scientific evaluation and planning	(5)	175,000	(5)	175,000	0	0
4. Total training grants	591	18,633,000	565	18,780,000	-26	+147,000

Laboratory and clinical research

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	346	\$2,979,000	366	\$3,113,000	+20	+\$134,000
Other expenses		5,506,000		6,884,000		+1,378,000
Total	346	8,485,000	366	9,997,000	+20	+1,512,000

PROGRAM PLANS FOR FISCAL YEAR 1967

CLINICAL RESEARCH

Medical neurology

Investigations in medical neurology emphasize multifaceted and integrated studies of patients with neuromuscular disease. Applied directly to the patients are the newest aspects of the basic research techniques of histochemistry, biochemistry, immunology, electronmicroscopy, tissue culture and autoradiography. The interrelating of these basic techniques and applying them to study the dynamic molecular aspects of neurologic disease is our newly developing approach. Specific abnormalities of protein metabolism have been identified and/or further clarified in such neuromuscular diseases as several forms of muscular dystrophy, myasthenia gravis, and peripheral neuropathy. The objective is to identify and treat specific biochemical abnormalities in both genetically inherited and acquired neurologic disorders. An expanding program is concerned with investigating amyotrophic lateral sclerosis by basic clinical research techniques as well as clinical therapeutic trials.

Radiographic studies are concentrating on new instrumentation and techniques for the demonstration of brain tumors and other neurologic disorders. Basic pharmacologic investigation is concerned with the molecular aspects of the link between excitation and muscle contract in order to understand abnormalities thereof.

Surgical neurology

Investigations are conducted on epilepsy, head injury, involuntary movements, cerebral palsy, cerebral degeneration in children, effects of surgery on the brain, effects of low temperature on the brain, disturbances of language and memory, and in a variety of surgical techniques.

Head injury and its accompanying brain damage are important causes of death and disability which are now being investigated. Through the means of high-speed photography, X-ray and various physiological recording devices, the immediate effects of brain injury are being observed and analyzed. In addition, histochemical and electron microscopy studies of the injured brain are being made. A system of classifying and coding patients with head injury has been developed and is being used, while a few highly selected patients with severe injury to the brain stem are being studied directly.

Cerebral edema is an important consequence of head injury. The occurrence of brain swelling within the closed cerebral cavity greatly aggravates the results of injury. For this reason, modification of brain swelling would be an important contribution. Investigations of the disturbed permeability of the blood brain barrier through the use of radioactive tracers and other specialized techniques are being conducted.

The effect of cold and drugs on epilepsy, and drugs on brain tumors are being studied. Using a new technique, the brain is cooled while anticonvulsant drugs are given by vein, and in an equally new technique, anticarcinogenic drugs are instilled directly into the brain cavities of the afflicted patient.

The physiological mechanisms of involuntary movements and epilepsy are studied by electronic techniques, and the clinical investigations in epilepsy, brain tumors and involuntary movements are supported through experimental surgery in animals, which are also used as a means for studying the effects of surgery itself.

Ophthalmology

Studies of the mechanisms through which the visual image is converted to coded messages within the eye and thus interpreted within the central nervous system are progressing. These investigations have produced a new theory of the basic mechanisms whereby light falling upon the retina generates nerve activity. Investigations of the electrical responses of the eye have been used for the diagnosis of diseases leading to blindness such as *retinitis pigmentosa*, for the early recognition of degeneration of the retina produced by drugs, specifically chloroquine, and for the differentiation of various forms of night blindness.

Glaucoma investigations are concentrating on the mechanisms producing the increased intraocular pressure characteristic of that disorder, on pharmacological and physiological studies and the evaluation of the effectiveness of therapeutic agents in patients.

The approach to diseases of the cornea centers upon biochemical investigations of the nature of the collagenous supporting matrix of various parts of the eye. Such knowledge is essential to an understanding of the mechanisms through which the cornea becomes cloudy under disease.

The therapy of inflammations of the eye is being studied with particular attention to compounds suppressing toxoplasma infection and the use of antimetabolites in diseases in which an immunologic mechanism is suspected. The lens epithelium has proven an excellent experimental system to analyze the effect of anticancer drugs on a cellular level.

Electroencephalography and clinical neurophysiology

This Branch maintains a diagnostic service in electroencephalography widely called upon by the entire Clinical Center.

Investigations are centering on an understanding of the essential brain mechanisms underlying epilepsy and related brain abnormalities. Using fine needle electrodes in animal and human subjects, the electrical activity of the brain cells is being recorded under normal and abnormal conditions. Such knowledge is essential to an understanding of the deviations of electrical activity underlying the epileptic seizure.

Other interests verge on the mechanisms at the basis of abnormal motor behaviors such as those occurring in Parkinson's disease and related disorders.

LABORATORY RESEARCH

Neuroanatomical sciences

This laboratory conducts investigations of the mysterious processes which guide the growth and development of the nervous system, sense organs, and motor structures within the developing embryo, and of the mechanisms whereby these normal processes may be disturbed by toxic drugs, injury or disease.

These are the processes underlying such devastating congenital malformations as microcephaly, hydrocephalus, meningocele, congenital cataract and glaucoma. They also relate to problems of regeneration of the injured nervous system.

In addition, this laboratory conducts pioneering investigations of the nervous pathways for hearing, and of the development of the organ of hearing.

Biophysics

The work is directed generally toward elucidating the basic mechanism of activity in nerve and other excitable tissues. The principal objective is to determine the physical and chemical processes which underlie the ability of the nerve axon to transmit the information carrying impulse. The approach combines laboratory investigations on single axons, artificial membranes, and membrane models using mathematical analysis with the aid of computers. The experimental work is extending and improving the concept of fast and slow channels by which several different univalent positive ions cross the squid axon membranes and the role of divalent positive ions in blocking them. New experimental and theoretical methods and techniques are being developed to determine the size and number of these channels and to describe the processes which open and close them.

Neurochemistry

The employment of newly developing analytical techniques for the investigation of the chemical structure of the brain in health and disease underlies much of the ongoing research in neurological and sensory disorders. For this reason, the Laboratory of Neurochemistry serves as a focal point for extensive collaborative work both inside and outside of the Institute. The laboratory is using new techniques to study the chemical concomitants of nerve activity and excitability, to study energy requirements of fluid and ion transport across membranes, and to investigate alterations of protein and amino acid components of the brain in health and disease. These basic studies apply to a host of neurological disorders including seizure states, concussion, cerebral edema, multiple sclerosis, virus encephalitides, amyotrophic lateral sclerosis, Tay-Sachs disease and similar lipidoses, disorders of muscle and genetically determined neurological diseases. Recent investigations have detected the essential biochemical defect in two of these devastating neurological disorders—Gaucher's Disease and Niemann-Pick's Disease.

Molecular biology

Many disorders of the brain and sense organs are the results of genetically determined deviations of chemistry and/or structure. New discoveries demonstrate that these deviations result from abnormalities of the genetic material (DNA), i.e. large complex molecules contained within the chromosomes of the living cell. Solution of these problems requires an elucidation of the mechanisms through which the genetic material may be damaged, and the processes whereby deviations of this material lead to developmental alterations of the body. These molecular biology studies are concerned with an explanation of these basic biological problems in molecular terms. Working primarily with bacteria and viruses that attack them, the mutagenic and chromosomal breaking alterations of DNA produced by various chemical and physical agents are studied, and the alterations in nucleic acid and protein synthesis and function resulting from modifications of the genes and leading to developmental malformations are analyzed. These studies are essential to the understanding of the mechanisms of inborn errors of metabolism and other genetically determined disorders.

Neuropathology

The Laboratory of Neuropathology is currently engaged in research on the functional and morphologic relationship between nerve cells and other non-neuronal, or glial, elements in the brain. Different animal species subjected to transection of a peripheral nerve are being studied in order to ascertain (1) the sequence of neuronal changes and (2) the incidence of mitotic cell division, both of which have been found to vary with age and species. A correlation between degree of neuronal change and incidence of mitosis in cells situated on the outside of blood vessels is demonstrable, suggesting that induction of mitosis is controlled by the functional condition of the nerve cell. Since the ensuing daughter cells become transformed to microglial cells, these series of investigations have provided new information about the origin and formation of these cells and about the interdependence of microglia and nerve cells. In addition to age and species differences, the effect of homeostatic changes, caused by administration of hormones, drugs, etc., is being scrutinized in an attempt to clarify factors involved in this interdependence.

Neurophysiology

Synaptic mechanisms continue to be a major subject of study. The manner in which unitary events are combined to form the larger evoked synaptic potentials has been elucidated for spinal motoneurons. Afferent fibers from muscle spindles make monosynaptic connections with motoneurons which are widely distributed over the surface of the motoneurons. Different afferent nerves may have somewhat different patterns of termination and the interaction between synaptic activity produced by stimulation of different nerves is influenced by the dendritic distribution of their terminations. Each nerve ending may produce from one to several unitary, quantal synaptic events when the ending is activated by an action potential. Even synaptic contacts in the periphery of the dendritic tree provide a significant excitatory depolarizing effect in the cell soma near the spike trigger zone.

Sensory processing in the cochlear nucleus has been studied in anesthetized and in unanesthetized decerebrate cats. Relatively simple sensory mechanisms predominate in the cochlear nucleus in general, although differences between the dorsal and ventral divisions of the nucleus have been demonstrated. A marked alteration in response patterns of neurons in the primary auditory nucleus is produced by barbiturates, emphasizing the distortion in neural properties introduced by this class of drugs.

Work is going forward which involves analysis of electrical signs of altered metabolic and blood-brain barrier transport in the brain. The brains of the cat and the Rhesus monkey have shown striking reactions to changes of pH of the blood and to blood flow. These factors are sensitive to injury and work on hypoxic and concussion is being continued in collaboration with the Surgical Neurology Branch.

Perinatal physiology

The Laboratory of Perinatal Physiology in Puerto Rico carries on studies in comparative neurology, physiological psychology, neurochemistry, and social and instinctual behavior. The main focus of attention, however, is in the causation and prevention of cerebral palsy and mental retardation. It has been possible to mimic in monkeys almost all the classical pictures of cerebral palsy as it afflicts man.

Studies are carried out on the chemical changes occurring in the blood stream and brain of the asphyxiated infant monkey. Studies relating to blindness include investigations of the identity and locus within the nervous system of processes involved in visual perception, memory and learning. Other studies record the electrical activity of single nerve cells of the visual mechanism of the primate brain.

The adjustments of the primate nervous system, and the reactions of damaged animals under more normal conditions are under investigation in free-ranging monkey colonies on several small off-shore islands. In addition to supporting scientific studies of the monkey, these facilities also serve as a source of unique population of the rhesus monkey. The uniqueness derives from their known source of origin, and their prolonged isolation from disease contact.

Its facilities include a main laboratory at the U.S. Public Health Service Out-patient Clinic in San Juan, and four islands on which free-ranging primate colonies are established. A new research facility, in conjunction with the National Institute of Child Health and Human Development, is being built on the grounds of the Puerto Rico Medical Center, with completion expected in 1969. In addition, steps are being taken to transfer land from another federal agency on which it is intended to establish an experimental primate compound facility several miles away, and complementary to the new facility at the Medical Center.

Program plans for 1968

January, 1968 the Institute expects to occupy the new facility in Bethesda, which for NINDB totally, provides approximately an additional 73,000 net square feet. Within this, two new programs will be created—Neuro-otology and Neurological Control—and laboratories now in the Clinical Center will relocate and expand in the new building. In addition, the clinical branches remaining in the Clinical Center will be able to expand because of space vacated by the laboratories moving to the new facility.

Neuro-otology/ology

In 1968 the Institute plans to establish a new Neuro-otology/ology Branch within the intramural program of the Institute. The Institute has developed a

strong extramural program in the communicative disorders; however, one limitation of this program is that it tends towards compartmentalization because of the scarcity of trained investigators in many of the pertinent disciplines. There are broad and basic problems, therefore, which go uninvestigated because these problems require an interspecialty team committed to problems that cut across the traditional foci of interests in the communicative processes. The type of research activity visualized for this Branch is much broader than that which is possible in the usual medical research facility. Human communication is a multifaceted product of complex neurological processes. Consequently, the scientific evaluation of both normal and abnormal communicative processes requires multidisciplinary research. A Neuro-otolaryngology Branch will have two missions; (1) to conduct long-range, multidisciplinary research on the normal processes of the sensory, central and efferent mechanisms which are used for human communication, and (2) to carry out similar research on the identification, manifestations and amelioration of aberrations in these mechanisms.

In addition to research and training, the Neuro-otolaryngology Branch would provide a consultation service, particularly in otolaryngology and audiology both within this Institute and the Clinical Center at Bethesda, generally.

Neurological control

Neurological science has progressed to a point where it is now possible to obtain precise knowledge of the sensory reception of information into the nervous system and analysis of this information within the brain. Newly developing computer techniques are providing the capability for a much more sophisticated analysis of the nervous system and its functioning. To exploit these new capabilities, the Institute plans to develop within its Bethesda program a Laboratory of Neurological Control. This research unit will develop techniques for nervous system control of external devices (outward information transfer), and methods of external control of the nervous system (inward information transfer). Other investigations will seek to construct mathematical models of information processing in the nervous system and explore the process in depth.

Man has only begun to tap the capabilities of the nervous system. Thus, physicians in the future may not only "key-into" the nervous system to provide aids for the blind and the deaf, they may also "key-out" of the nervous system to bypass the physical restrictions of the handicapped. In normal man, it will be possible to activate remote devices without the necessity for cumbersome movements. One day in the future, information may be transferred directly from the nervous system to a computer without muscular effort. Some scientists predict that this is an inevitable human development, upon which survival of society may depend.

SUMMARY OF INCREASE

Included in this net increase is \$942,000 for program expansion as explained above offset by one less day of pay in 1968. There is also an increase of \$570,000 for centrally furnished services from the "National Institutes of Health Management Fund".

Collaborative research and development

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	228	\$1,340,000	230	\$1,350,000	+2	+\$40,000
Other expenses		4,225,000		4,600,000		+375,000
Total	228	5,565,000	230	5,950,000	+2	+415,000

ACCIDENT AND INJURY

During 1967 a great deal of the planning necessary to launch an aggressive and expanded program of research into the problem of acute head injury was accomplished and significant steps were taken to initiate such a program. A conference on craniocerebral trauma, sponsored by the American Neurological Association, the American Physiological Society, the Society of Neurological Surgeons, and the National Institute of Neurological Diseases and Blindness was held in Chi-

cago in February, 1966. The clinical and basic scientists, from seven countries, participating in the conference identified the following areas as warranting immediate attention: more precise information regarding incidence and prevalence; classification of injuries, and standards of measurement for clinical and research activities; means for prevention or reduction in incidence and severity; establishment of specialized facilities with integrated services for the treatment and investigation of head injuries, which will include sequential studies and rehabilitation, and multidisciplinary research programs; the participation of engineers and physical scientists in these efforts; the utilization of other clinical and experimental laboratories; the support of career scientists; the opportunities afforded by military experience; education and dissemination of information.

The Congress, in September 1966, stated in its appropriation document that "a substantial research and training program on accidental head injuries and consequent brain damage should be launched without delay," and designated \$1.5 million for this effort, thus allowing the implementation during 1967 of some of the plans formulated at the Chicago conference.

A study of the incidence and prevalence of accidental head injury from all causes has been initiated. The pilot phase will take place in the Buffalo, New York, metropolitan area (Erie County), and involves a circumscribed population. Additional research projects involving larger, smaller, and more diverse population groups are being planned.

The compilation of a glossary, by expert consultants, has been completed. This will be useful in multidisciplinary research activities. The same consultants, utilizing updated criteria, will formulate a categorization of head injuries.

The award of several planning grants for clinical research centers concerned with head injury during 1967 should result in the future demand for operational grants for such centers.

Efforts are underway to develop physical and mathematical models simulating human and animal craniocerebral structures, the mechanical loads applied to them, and the responses of these systems, in order to better study and understand the physical forces of head injury.

Longitudinal studies of the effects of head injuries occurring in war situations are being carried out. The initial and partial follow-up data on 1400 U.S. Armed Forces casualties and 100 controls from the Korean campaign are being supplemented by a 15 year follow-up in collaboration with the Veterans Administration. The statistical evaluation of retrospective data on 1100 casualties from World War I is in progress. Comparative studies of the material from World Wars I and II and the Korean campaign will follow. Pilot efforts have been undertaken with the Department of Defense to gather comparable data during the acute phase of combat head injuries from the Vietnam conflict.

EPILEPSY

The pilot phase of a collaborative study of epilepsy coordinated by the Institute and involving four clinical centers is proving the feasibility of a prospective data collection study of all aspects of epilepsy. Upon completion of a pilot phase during 1968 the study will be broadened to include 8 to 12 centers and data on a large population of patients. The study will yield many data heretofore unavailable concerning the natural history of epileptic and related paroxysmal disorders.

In the past decade not a single new anti-convulsant compound has been developed which can be used in the control of epileptic seizures. Current anti-convulsants and other drugs have proven to be only about 60 percent effective in the control of these disorders. With funds made available in 1967 a program of support for anti-convulsant drug development has been planned. In 1968 this program will be continued and strengthened and may possibly include support for field trials and tests of new anti-convulsant compounds.

Although a great deal of indirectly related but important research has been done in the past several years on the problem of the epilepsies, there has been insufficient information exchanged. During 1967 support of publication of a complete international bibliography on epilepsy is contemplated. In the future this effort can be complemented by the establishment of an information center which can review, store, and disseminate scientific and technical information on epilepsy and basic research related to the problem.

COLLABORATIVE PERINATAL PROJECTS

The objective of the Collaborative Perinatal Project is to determine those factors operating during pregnancy, labor and the early years of life which interfere with healthy development of the nervous system and sense organs. The study relies upon the collaboration of 15 institutions in gathering comprehensive data from pregnant women and their children.

This project, supported by the Institute was conceived and undertaken eight years ago in collaboration with 14 hospitals and university medical schools. Basic objectives are to learn why more than a million pregnancies in the United States each year fail to produce living children, why 126,000 babies born every year will be mentally retarded, and why thousands of others are born with physical defects.

Participating institutions, in addition to Buffalo's Children's Hospital, are the Boston Lying-in-Hospital, Brown University and Associated Hospitals, Charity Hospital of Louisiana at New Orleans, Children's Hospital of Philadelphia, Children's Medical Center of Boston, Columbia University, Johns Hopkins University, Medical College of Virginia, New York Medical College, Pennsylvania Hospital, University of Minnesota, University of Oregon Medical School, and University of Tennessee College of Medicine.

Project investigators now are assessing data collected on nearly all of the 60,000 pregnancies and resultant babies over the past seven years and more. These data pertain to infections and illnesses experienced by each mother during her pregnancy, the drugs she took, accidents she may have suffered, and other health circumstances surrounding the birth of each child as well as followup data on each child since birth.

Several hundred children born to mothers during the first year of the project, and now seven years or more old, are about to undergo final examinations and will soon complete their participation in the study. Final analysis of the entire data cannot begin until 1974, however, when the total information goal of the project is complete for all children.

Meanwhile, because the study is prospective rather than retrospective, investigators are finding their Perinatal Research Project data highly valuable where neurological defects have appeared. In these cases, considerable etiological information is readily at hand, as opposed to difficult and often impossible backward searching for information on a child's development.

Project data also have enabled a number of significant findings, to date, revealing or confirming that—

Older mothers—those over forty—are most likely to have infants with neurological or psychological abnormalities.

Mothers fifteen years of age or under bear a higher percentage of babies with abnormalities than more mature women do.

Incompetent cervix remains a major high-risk factor in neurological damage and infant deaths.

General anesthesia given the mother during cesarean delivery appears to be related to poor response of the baby at birth.

A marked increase in neurological abnormalities is apparent in premature children. Thirty percent of one-year-old babies with neurological problems were born prematurely.

A wider understanding has been gained of the effects of certain drugs administered during pregnancy.

In addition, collaborating investigators hope to gain new knowledge relating to the role of viruses, radiation toxicity, chemical abnormalities, vascular disturbances, and other factors producing retardation.

The beginning of a new phase of this study may signify the beginning of even greater knowledge of the causes of birth defects as well as later health problems. Eventually, perhaps, these causes will be prevented or eliminated.

Program plans for 1968

With new laboratory space becoming available on January 1, 1968, it is planned to extend to special areas of the project the study of pathological changes in cerebral palsy and the evaluation of the role of infectious agents in neurology disorders of infancy and childhood.

MEDICAL INFORMATION CENTER

Under the leadership of the Office of Program Analysis, the network of specialized information centers to serve the biomedical community is in various

degrees of development. The first center concerned with clinical neurological problems is operational, the center on basic neurological sciences is near operational, whereas the center on speech, hearing, and human communications is still in the developmental phase. The newest center concerned with vision and diseases of the eye, recently designated, is getting underway with recruitment and initial planning.

These large information centers, each covering a specialty area, are integrated with each other and with the National Library of Medicine to avoid duplication of effort. While these centers are considered the core of the network, it is planned that they, in addition to their own information analysis activities, will support information analysis satellites at other research centers where specific categorical research programs are underway. A National Advisory Committee for the Information Network will be established in 1967.

Additional information activities, although not directly linked with the network, include the literature alerting service in the area of cerebrovascular disease and stroke which is being continued and expanded to a larger user audience.

SUMMARY OF INCREASES

The total increase includes \$25,000 for centrally furnished services of the National Institute of Health management fund and the balance or \$390,000 will provide additional funds for two positions and for continuing support in the research fields of head injury, slow latent and temperate viruses and other degenerative disorders of the central nervous system.

Biometry, epidemiology, and field studies

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	80	\$1,040,000	80	\$1,040,000	0	0
Other expenses.....		1,228,000		1,265,000		+37,000
Total.....	80	2,268,000	80	2,305,000	0	+37,000

PROGRAM PLANS FOR 1967 AND 1968

BIOMETRICS

The major program of this Branch has been to standardize the collection of statistics on blindness and severe vision impairment throughout the United States. For this purpose the Model Reporting Area for Blindness Statistics has been established. Currently, 14 states comprising approximately 19 percent of the nation's population are included in the Model Reporting Area. During 1967 four additional states are in the process of preparing blindness registers in compliance with the standards established for the entire Model Reporting Area. When these states are added to the Model Reporting Area, approximately one-third of the nation's population will be covered. In addition, studies validating the accuracy of data reported and the completeness of the registry's coverage have been initiated. This program, which for the first time is providing consistent data on the incidence, prevalence, and causes of blindness, has received wide endorsement from volunteer agencies concerned with the problem of vision and vision impairment. The validity of the data is continually being improved by studies of the methodology whereby such reporting systems can be established and maintained in fields other than blindness or vision impairment. This will allow more states to prepare blindness registers within their jurisdictions and subsequently increase the coverage and accuracy of the Model Reporting Area's statistics. Validation studies concerning the coverage of the registers and the accuracy of reported information will continue.

EPIDEMIOLOGY

During 1967 an aggressive program of investigation into the epidemiology of stroke has been launched. The validity of certain mechanisms utilized in reporting cerebrovascular disease deaths is being investigated. In addition research into the method of diagnosis of stroke is being initiated.

Other studies of peripheral neuritis, Bell's palsy, and retrobulbar neuritis and of patterns of multiple sclerosis in the United States and Puerto Rico are continuing.

Genetic studies of selected acute and chronic neurological disorders have been initiated with current emphasis on a series of 200 cases of dystonia musculorum deformans.

A registry of 2,500 Guamanians now living in the United States is completed and related to studies being carried out on Guam, with appropriate laboratory back-up in Bethesda. It is hoped that these investigations will provide more definitive information on the role of genetics in the apparent susceptibility to certain neurological and sensory disorders.

The unique resources available on the island of Guam will be utilized for further investigations of amyotrophic lateral sclerosis and other neurological and sensory disorders with high incidence in that isolated environment. Investigations will be continued to elucidate a possible environmental or genetic factor in the particular ALS/Parkinsonism-dementia complex. The possible occurrence of this disease in non-Chamorro residents of Guam will be subjected to investigations. The possible virological cause of ALS is being studied through the inoculation of presumptive infected material into a variety of animals including primates and domestic farm animals. Also unusual metabolic patterns of glucose and uric acid are being studied in hopes of relating these abnormalities to the neurologic diseases on Guam.

In the laboratory, lymphocytes from patients with multiple sclerosis and other degenerative neurological diseases are underway in order to determine the role of hypersensitivity in these diseases.

Efforts to develop more precise methodology for the early diagnosis of glaucoma has become a major focus of the Section on Ophthalmic Field and Developmental Research. A critical evaluation of methods of tonometry which has been completed as have surveys of selected white and Indian populations in the United States. An intensive investigation of the genetics of eye diseases is underway. This study is utilizing a registry of over 300 pairs of twins all located in the Washington, D.C. area. The examination of these identical and non-identical twins will provide important information regarding the role of an inheritance in glaucoma, myopia, and other eye disorders.

A study of pathologic diseases of the eye has been undertaken and promises to yield significant data concerning the tolerance of the eye and ocular tissue to carcinogens.

Epidemiological investigations of the blood vessels of the eye which are important in the evaluation of cerebrovascular diseases demand more precise instrumentation for measuring and evaluating the characteristics of those blood vessels. The use of television scanning devices and advanced television technology presents a possible avenue of research and development.

SLOW AND LATENT VIRUSES IN NEUROLOGICAL AND SENSORY DISEASE

For the past several years the Institute has been developing a program to search for viruses as a cause of chronic neurological disease such as, multiple sclerosis, amyotrophic lateral sclerosis, Parkinsonism and the encephalitides of childhood. The Project of Slow, Latent, and Temperature Virus Infections was established as part of the Study on Child Growth and Development and Disease patterns in primitive cultures in 1961-62. The Institute had long recognized the need for a laboratory whose major mission was to attempt to transmit chronic and sub-acute degenerative diseases of the central nervous system of man to experimental hosts, and in so doing, established an infectious etiology for the specific diseases under study. The long term nature of the studies was manifest in the epidemiological and neurohistological similarities between Kuru, a disease in humans, and scrapie, a disease in sheep which is a proven transmissible disease caused by an extremely small filterable agent with an incubation period of three to five years and whose expression of disease was shown to be genetically determined. Because of the occurrence of this type of disease in wildlife, a collaborative program was established with the Bureau of Sport Fisheries and Wildlife, U.S. Department of Interior. Facilities at the Patuxent Research Center, Laurel, Maryland, were provided and augmented by the Institute's construction of a temporary primate holding facility.

The scope of the program initiated in 1962 included inoculation of several species of apes and smaller primates; small experimental animals, e.g., mice, guinea pigs, hamsters, rabbits; and avian hosts; and tissue culture cell lines.

Such experimentally inoculated hosts would be held in isolation for a period of five to ten years. The diseases under study are Kuru, Scrapie, Amyotropic Lateral Sclerosis, the amyotrophic lateral sclerosis—Parkinsonism dementia syndrome observed in Guamanians, encephalitis, multi-focal leuco-encephalopathy, Schilder's Disease, acute necrotizing leuco-encephalopathy, and ALS material from monkeys from the USSR.

Eighteen months after inoculation of animals with suspensions of brain tissue from Kuru patients, a clinical syndrome strikingly similar to Kuru in humans was observed in a chimpanzee. In subsequent weeks and months, additional chimpanzees, inoculated with Kuru-affected human brain material, have developed disease. The neuropathology is identical to the neuropathology described as occurring in Kuru human brain. In all, six of seven Kuru patients' brains tested have induced disease in eight of nine chimpanzees inoculated. No other experimental host system has as yet become affected, nor has disease developed in other animals following their inoculation with suspension of human tissues from patients affected with other diseases under study. This highly significant development, restricted for the time to chimpanzees, represents the transmission of a human degenerative central nervous system disease to an experimental host with perhaps a genetically influenced disease expression.

These developments necessitated expansion in the number of experimental animals to be inoculated; an increase in the number of species of ape, monkey, and domestic animals in an attempt to broaden the host susceptibility range and to find more readily available and substantially less expensive animals than the chimpanzee; enlargement and significantly improved laboratory and animal holding facilities to insure protection of (a) individual investigators and technicians, (b) the public health environment, and (c) long term program animals in well-controlled isolation. Further, in order to move rapidly in the followup of the program developments, the Institute has proposed the increase of space, both by temporary construction and the use of contracts, with increased 1967 appropriations.

SUMMARY OF INCREASES

The increase of \$37,000 includes \$7,000 for centrally furnished services of the National Institutes of Health Management Fund and \$30,000 for additional logistic support.

Training activities

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	3	\$38,000	3	\$38,000	0	0
Other expenses.....		33,000		34,000		+\$1,000
Total.....	3	71,000	3	72,000	0	+1,000

This activity supports the Institute's training programs for professional, technical, administrative, and clerical personnel, including job-related training at both government and non-government facilities.

The primary objective of the program is to train scientists in particular skills which are needed to carry on various Institute research projects. Long term training is provided by the establishment of agreements and contracts with appropriate schools or institutions.

Program plans for 1967 provide for training in otolaryngology, neurology, epidemiology, and neurosurgery; and includes an increase of \$1,000 for additional administrative support of the program.

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1931

Review and approval of grants

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits-----	109	\$974, 000	109	\$974, 000	0	0
Other expenses-----		1, 206, 000		1, 415, 000		+\$209, 000
Total-----	109	2, 180, 000	109	2, 389, 000	0	+209, 000

EXTRAMURAL PROGRAMS

Within the extramural program office of this activity, all grants and awards, such as research grants, program project grants, training grants and fellowship awards are programed, examined, processed, encumbered and continually followed up by the professional, administrative, and clerical staff. Formal reviews are performed by several organized and *ad hoc* bodies of non-governmental authorities in the health and science fields, including the National Advisory Council on Neurological Diseases and Blindness, training review committees and study sections of this Institute and Division of Research Grants, National Institutes of Health.

PROGRAM ANALYSIS

The Office of Program Analysis has established a cross-indexed file of all current research in the Institute. This is an operational file for use in planning and answering inquiries. Next year, it will be expanded to include more data about relevant research carried out by other government agencies and private foundations. It will also be expanded in relation to reports relevant to progress in current or long-term projects.

A manpower file is being compiled concerning research in the neurosciences. This file is cross-indexed by a scientist's name, geographical location, or by discipline and subject. The principal investigators of the Institute's grantees are entered in this file, and it is being expanded to include all American scientists working in the fields of neuroscience. This is being used to review and update the manpower estimates and training program effectiveness of the Institute.

A review of the data pertaining to the economics of diseases for which the Institute has responsibility has been undertaken, and all information relevant to this problem is being assembled.

A special section of the Office of Program Analysis has been instituted for problems of Vision, Blindness, and diseases of the Eye, and will be a focal point for information of the Institute activities relating to these problems.

The assembly of information concerning scientific activities of the Institute and progress made by the various scientists supported by the Institute will allow for more detailed evaluation and planning in the forthcoming years.

SUMMARY OF INCREASES

Of the total increase, \$25,000 is for additional program support of the institute and the balance, \$184,000, is for centrally furnished services of the NIH management fund.

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits-----	30	\$308, 000	30	\$308, 000	0	0
Other expenses-----		563, 000		581, 000		+\$18, 000
Total-----	30	871, 000	30	889, 000	0	+18, 000

1932 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

This activity provides support for the Office of the Director, including the professional, administrative, secretarial and clerical staff required for the direction and coordination of all Institute programs, the review of current and proposed operations, and supervision and provision of administrative services on a centralized basis. These administrative functions include also management in the areas of finance, personnel, supply, travel, space utilization, and management analysis.

Included in the net increase is \$14,000 for support of administrative cost associated with the expanded programs and \$4,000 for centrally furnished services of the NIH management fund.

New positions requested, fiscal year 1968

	Grade	Number	Annual salary
Research:			
Full grade (2).....	CO		\$16,294
Medical officer.....	GS-15	4	17,645
Scientist.....	GS-15	2	17,555
Do.....	GS-14	2	15,101
Mathematician.....	GS-13	2	12,875
Research chemist.....	GS-13	1	13,312
Research psychologist.....	GS-12	2	10,920
Chemist.....	GS-11	1	9,214
Medical technician.....	GS-9	1	7,696
Biologist.....	GS-7	1	6,448
Clerical assistant.....	GS-7	1	6,448
Biological laboratory technician.....	GS-5	1	5,325
Clerical assistant.....	GS-5	2	5,325
Subtotal.....		20	144,158
Collaborative research and development:			
Supervisory statistician.....	GS-15	1	17,555
Statistician.....	GS-14	1	15,101
Subtotal.....		2	32,656
Total new positions, all activities.....		22	176,814

Senator HILL. Now, Dr. Masland.

Doctor, we are glad to have you back with us. How long have you been head of the Institute, Doctor?

Dr. MASLAND. Eight years.

Senator HILL. Your predecessor was Dr. Bailey.

Dr. MASLAND. Yes, sir.

Senator HILL. Where is he now, may I ask?

Dr. MASLAND. He is in Puerto Rico.

Senator HILL. He is doing some good down there, I am sure.

Dr. MASLAND. Yes, sir; he is.

Senator HILL. All right, you may proceed in your own way.

LONG-TERM CARE OF NEUROLOGICALLY DISABLED

Dr. MASLAND. Mr. Chairman and members of the committee, Federal programs for the care of the disabled are bringing to the attention of the public, now as never before, a problem which has long existed—the problem of the long-term care of the neurologically disabled. These include the victims of stroke, Parkinson's disease, multiple sclerosis, muscular dystrophy, epilepsy, cerebral palsy, brain tumors, head injury, paraplegia, and the many handicapping disorders of vision, speech, language, and hearing.

The economic burden of the neurologically disabled runs into billions of dollars annually; the human suffering of individuals and families is immeasurable. The ultimate solution must be prevention.

For this reason, we urge that while the Government presses forward with programs of the rehabilitation and care of the disabled, continued support be given to the strong national research program for the elimination of these disorders.

Senator HILL. Doctor, you are like I am; you are for prevention, aren't you?

Dr. MASLAND. Yes, sir.

ECONOMIC COST OF NEUROLOGICAL AND SENSORY DISORDERS

To appreciate the extent and long-term nature of these disabilities, it is helpful to review the records. About 200,000 adults are receiving social security benefits for lifetime disabilities which started in childhood. Of these, about 90 percent are victims of neurological disorders. Federal payments to this group alone cost the Government more than \$10 million every month, yet this group represents but a small fraction of the total thus disabled, others being maintained by their families.

LEARNING DISABILITIES

Another manifestation of neurological disease is becoming evident within the school system. Here we find that from 10 to 20 percent of the children are showing learning disabilities, often due to minimal brain dysfunction. In many instances, delay in speaking, inability to read, or school dropout are due to intellectual impairment from injury arising during pregnancy, or occurring at birth or during infantile illness or injury. In our complex society, this heavy burden of school failure and intellectual incompetence is intolerable.

Senator HILL. I am glad you emphasized that with reference to the schoolchildren increase. The average person does not think much about that.

Dr. MASLAND. Many of these school deficits are the result of perinatal injury which could be prevented if we had a clearer picture of what is responsible.

HEAD INJURIES

Much more attention is now being given to the number of serious disabilities as well as deaths in an area affecting all ages—accidents. In 1965, more than 100,000 people were killed in accidents, half of which were automobile mishaps. Approximately 70 percent of these deaths from auto accidents resulted from head injury. Each year approximately 200,000 men, women, and children are hospitalized with some degree of head injury. Of these, nearly half are left with impairment which affects their future lives. In economic terms, the loss due to head injuries has been estimated as several billion dollars per year. Additionally, it is estimated that there may be as many 60,000 paraplegics in the Nation needing various degrees of long-term care.

Senator HILL. As we turn out more and more automobiles in time we will have more and more of these injuries.

Dr. MASLAND. Yes, sir. We have not geared up either for effective management. We are doing much better in the management of military casualties than we are in the management of our civilian casualties which outnumber the military casualties many times.

MAJOR AREAS OF NEUROLOGICAL AND SENSORY DISEASE REQUIRING LONG-TERM CARE

Major areas of neurological and sensory disease in which patients need long-term care include blindness, deafness, stroke, Parkinson's disease, epilepsy, multiple sclerosis, brain tumor, and neuromuscular disease. Over 400,000 are legally blind and more than a million are unable to read newsprint; 4 percent of the adult population suffers from serious hearing disabilities; some 2 million are presently disabled by stroke; 500,000 by Parkinson's disease; more than a million with epilepsy; 500,000 with multiple sclerosis and other demyelinating disorders; 200,000 have defects from brain tumors; and 250,000 with muscular dystrophy and other neuromuscular disorders.

STROKES

Senator HILL. Have we made any real progress on strokes?

Dr. MASLAND. We have increasingly improved our means for the early diagnosis and recognition of stroke. And particularly the techniques for differentiating stroke from other forms of neurological disease such as brain tumor, which may resemble strokes. This is one of the most important aspects of the stroke problem which requires still greater emphasis. We must develop inexpensive, painless, harmless means for demonstrating the conditions of the blood vessels of the brain so that the possibility of stroke can be recognized before the stroke has occurred. If we wait until the stroke has occurred, the opportunity for prevention is lost.

Senator HILL. But in the past we have not been able to make any diagnosis about the possibility, have we?

Dr. MASLAND. That is correct.

Senator HILL. Only after the stroke has occurred have we known anything about it.

Dr. MASLAND. That is right.

Senator HILL. Are you going to make a suggestion, Doctor?

Dr. SHANNON. Senator Hill, I would like to point out that, interestingly enough, in the past 10 years, as a result of advances in other areas, there has been a reduction of about 20 percent in fatalities due to stroke. This is largely a result of the ability to control hypertension. It is nice to have a rivalry of this sort between the two Institutes.

Senator HILL. You mean between heart and neurology?

Dr. MASLAND. Yes, sir. The Heart Institute would like to do away with stroke by solving the problem of atherosclerosis. But I think this is quite a way off. Meanwhile, the Neurological Institute is concerned with what one does under existing circumstances. To this extent the programs mutually reinforce one another.

Senator HILL. All right, Doctor.

Dr. MASLAND. For most of these disorders the cause is unknown, and no cure or effective treatment is available. The only hope for those now afflicted and for many others yet unborn is research.

EPILEPSY

Senator HILL. By the way, speaking of stroke, what about epilepsy? Are you making any progress?

Dr. MASLAND. We have progressively improved our ability to manage epilepsy. That is to say, to control the seizures by the use of anti-

convulsant drugs. Our other important advances are not so evident in terms of immediate gains. These are gains in our understanding of the nature of the epileptic process and the disturbance of nerve activity which causes the seizure. But from the practical point of view, our major gains have been improved anti-convulsant treatment as a preventive of seizures.

Senator HILL. That is through drugs?

Dr. MASLAND. Through drugs. This is an area which I believe also is one where a strong program is important. I think that there is an opportunity for further refinement of the types of drugs which will be effective in controlling seizures.

PARKINSON'S DISEASE

Senator HILL. What about your Parkinson's disease?

Dr. MASLAND. The same applies there. Last year the Congress made available special funds for a group of diseases spoken of as the degenerative diseases. These include multiple sclerosis, amyotrophic lateral sclerosis, Parkinson's disease, and a number of others.

These diseases have certain features in common. Included in our research is a beginning program to study the chemistry of these diseases and to improve the drug control. The study of drugs in Parkinson's is of importance from two points of view. The drug effects appear to be very specific in Parkinson's, so specific as to suggest that there is a relationship between these drugs and the chemical derangements which may be responsible for the disease. Thus, the study of the drug effects may give us clues as to cause and prevention.

In addition, the drugs now available are quite helpful in certain patients in alleviating the symptoms. Naturally we hope that by modifying these drugs further we can obtain drugs which are still more specific in their effects.

Senator HILL. That would apply to practically all these diseases you have enumerated here?

Dr. MASLAND. This group, yes.

Senator HILL. There is a vote pending on the Senate floor. Would you rather that I come back or would you rather come back later?

Dr. MASLAND. Whatever is most convenient for you.

SUBCOMMITTEE RECESS

Senator HILL. We will have this vote and then maybe another one. I think under the circumstances it would be wiser to have you come back at another time to finish your statement. We will put you on as No. 1.

Doctor, we appreciate your testimony. We look forward to your finishing it, I hope tomorrow. I will have to check on what we are going to do in the Senate. I don't want to bring you back tomorrow and then bring you back for a third time. We would not want to interfere with the progress you are making out there.

I want to thank you very much. We look forward to having you finish your statement later, Doctor.

The subcommittee will recess subject to the call of the Chair.

(Whereupon, at 12:30 p.m., Monday, May 1, 1967, the subcommittee was recessed subject to call.)

DEPARTMENTS OF LABOR AND HEALTH, EDUCATION,
AND WELFARE, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1968

TUESDAY, MAY 2, 1967

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:05 a.m., in room 1223, New Senate Office Building, Hon. Lister Hill (chairman) presiding.

Present: Senator Hill.

NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS

STATEMENT OF DR. RICHARD L. MASLAND, DIRECTOR, ACCOMPANIED BY DR. JAMES A. SHANNON, DIRECTOR, NATIONAL INSTITUTES OF HEALTH; JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET; AND DR. LEO J. GEHRIG, DEPUTY SURGEON GENERAL

EXAMPLES OF ECONOMIC GAINS FROM RESEARCH

Senator HILL. The committee will kindly come to order. Doctor, we will be glad to have you continue now, sir.

RETROLENTAL FIBROPLASIA PREVENTION

Dr. MASLAND. The saving to the Nation through research accomplishment can readily be documented. An early example was prevention for a blinding eye disorder, retrolental fibroplasia.

A study supported by NINDB established that this disorder resulted from excessive use of oxygen for babies born prematurely. Hospitals across the Nation were immediately alerted and within a year after the discovery, the number of babies blinded by RLF had decreased from several thousand a year to less than a dozen.

It is not possible to guess how quickly this important step would have been taken without the study developed by the Institute. However, for each year that this study advanced our knowledge, an estimated 1,860 infants were rescued from a lifetime of blindness. The lifetime care of these infants saved each year represents a saving to the Nation of approximately \$130 million.

CORNEA INFECTION AND TRANSPLANTS AND CATARACT SURGERY

Eye research has brought many other significant advances in the past decade. A new antibiotic has proven effective in preventing blind-

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ness due to virus infection of the cornea. Sight for many has been restored through corneal transplants. Cataract surgery is now more generally available to the very young and the old than formerly.

Senator HILL. Why is that, Doctor?

Dr. MASLAND. It is because of new techniques altering the consistency of the lens so that it can be removed at an earlier stage in the development of the cataract. You don't have to wait for the lens to become absolutely solidified before attempting its removal. It is an improvement in surgical technique.

Senator HILL. We have made pretty good progress there, haven't we?

SPECIAL REPORT ON BLINDNESS

Dr. MASLAND. Yes, we have a special report on blindness.

Senator HILL. You are going to file that with us?

Dr. MASLAND. Yes, we will be glad to do that.

(The report follows:)

DISORDERS OF VISION

Of all the disorders which afflict man, probably none causes greater problems than blindness. A recent survey shows that, next to cancer, people in the United States fear blindness more than any other handicap.

It is estimated that there are in the United States today 411,000 legally blind and 3,500,000 who have only partial vision. About half of the totally blind are not employed, and approximately 75 percent are 40 years of age and over. The National Health Survey estimates that one million people in the United States have visual impairment so severe that they cannot read a newspaper. Based on available figures, it is possible that the annual bill for aid to the blind approaches \$1 billion.

Major causes of blindness and visual impairment include cataract, glaucoma, diabetic retinopathy, corneal scarring, uveitis, retinal detachment, tumors, amblyopia, and refractive anomalies.

Visual disability and blindness already can be reduced significantly by early detection and treatment. However, fundamental knowledge is still lacking in the understanding of causes and mechanisms of blinding diseases. The acquisition of this fundamental knowledge is essential to any major reduction in blindness and visual impairment. Too, since not only the eye but also the nerve pathways and the brain are necessary for vision, basic neurological research is involved. Sight depends upon the transmission of signals along nerve pathways to the brain and upon cognitive processes. This visual process profoundly affects learning, thinking motivation, and human communication.

Any concerted attack on eye disorders necessarily includes study of the systemic disorders which may involve the eye, such as diabetes, diseases of the blood vessels, and diseases of the nerve and brain.

Federal payments to the blind amount to more than \$95 million annually. Based on limited figures from New York State and Massachusetts, it is estimated that payments for aid to the blind within the States total from \$600 million to \$900 million annually. It is thus quite probable that the annual bill for aid to the blind approaches \$1 billion, a figure frequently used though not authenticated.

The incurably blind cannot benefit from either prosthetic devices, such as subnormal vision aids or drug therapy. The only recourse is to provide the people, if possible, with an electronic artificial eye. The Institute is interested in the research being conducted to further this goal and intends to support such activity.

Each step in understanding eye disorders, their nature and treatment represents solid progress toward an ultimate goal of good sight for all. As each discovery is made, however small it may seem in relation to the total problem, the goal is nearer.

During 1966, a number of significant steps were made in this direction.

THE INSTITUTE PROGRAM

The eye research and training programs at the National Institute of Neurological Diseases and Blindness include research at the Bethesda laboratories, research grants to individual scientists in academic institutions throughout the country, and training grants to aid universities and other centers in educating more ophthalmologists and research scientists. In addition to individual research projects, the Institute is supporting eight multidisciplinary research programs in vision. Model Reporting Areas in 14 States provide epidemiological data. Information about the eye and its disorders is also being obtained from the Institute's collaborative and field projects, especially the Laboratory of Perinatal Physiology in Puerto Rico. These vision programs are currently operating at a level of \$15 million.

Program Planning

To assist the Institute in review and planning, an Advisory Council Subcommittee on Vision and Its Disorders was organized a little over a year ago under the chairmanship of a member of the Institute's National Advisory Council. This Council Subcommittee is engaged in a general assessment of the present status of knowledge in vision and visual disorders, a review of current research and training, and identification of problem areas and special needs.

The Subcommittee is providing information gathered from the scientific community upon which the Institute can base long-term planning of its research and training program in the fields of visual science, visual disorders, and blindness. During the past year, the Council consulted with over 250 of the Nation's leading scientists to advise the Institute regarding those areas of investigation now most appropriate for intensive study.

National Information Center

To hasten dissemination of scientific information and to aid in program analysis, the Institute established this year a National Information Center on Vision Research at the Harvard University Library. Objectives of the Center are to define, identify, store, retrieve, and disseminate the literature of vision, so that the information may be communicated more quickly and completely.

This university-based unit combines the resources of a research center and one of the largest medical libraries. Within the Center, some of the Nation's outstanding scientists review and critically analyze the worldwide literature and research reports, in order to increase current awareness of research among scientists, teachers, and clinicians in ophthalmology and related fields; supervise the preparation of abstracts, summaries, reviews, and analyses of these data; and make this information available, both to the Institute for program planning and to the scientific community at large. Integration of the activities of the Center with the national network of specialized information centers, now being developed with the support of NINDB, is under way.

Conferences

The NINDB in cooperation with the American Academy of Neurology and the American Neurological Association jointly sponsored a Conference on Education in the Neurological Sciences which features a symposium on research horizons in several areas of neuroscience, including vision, as well as round-table discussions of aspects in neuroscience education. During the year, the Institute also sponsored a symposium on the retina and a workshop on refractive anomalies of the eye.

Program-Projects

In addition to supporting research projects related to specific problems of the blinding diseases, the Institute is now developing a group of eye research centers in which strong multidisciplinary teams are being mobilized to carry out a broad-scale attack on these disorders. Excellent studies have been reported from four of these vision program-projects now in full operation: The Retina Foundation of Boston, The Neurosensory Center at the State University of Iowa, the University of Chicago Program-Project for studies on glaucoma and disorders of the retina, and the Research Center for Corneal Disorders at Columbia University in New York. This year, with funds appropriated specifically for this purpose, new centers have been established at the Massachusetts Eye and Ear Infirmary, Boston; the Institute of Visual Science, San Francisco; the University of California, San Francisco; the University of California, Los Angeles; Washington University, St. Louis; Mt. Sinai Hospital, New York City; and Johns Hopkins University, Baltimore.

Outpatient Clinical Research Units

This year, the Institute has established a new program of *outpatient* vision research units. Persons who eye disorders do not require hospitalization are being studied in a more organized fashion by physician-scientists seeking clues to many eye problems. The new units offer opportunities for studying ocular diseases which affect only humans and cannot be duplicated in animals, and for continuing research which has reached its limits in the laboratory or in animal trials. Specific research areas include human macular diseases, diseases of the retina, diabetic retinopathy, corneal research, herpetic keratitis, and ocular pharmacology. The first outpatient units are located at Jefferson Medical College of Philadelphia, the University of Wisconsin, Duke University, New York University, the University of Miami, the Wills Eye Hospital and Research Institute of Philadelphia, Boston University, and Mount Sinai Hospital of New York City.

Blindness Statistics

Adequate statistics on blindness are essential to any program of prevention and control. These must be well-defined and carefully assembled. At both State and national levels, this need for information includes not only total blindness but also the related degrees of severely handicapping visual impairment, both in relationship to the socioeconomic setting of each case.

The Institute has organized Model Reporting Areas for blindness in 14 States to provide urgently needed information. These areas use a common method of classification and record keeping intended to produce comparable records from each of the cooperating States. With the addition of four States this year, the project represents approximately one-third of the States and also one-third of the population of the United States. Even so, an extension of the project will be necessary before figures of national significance can be produced.

Training

The research community working in the field of vision and its disorders is proud of its record of accomplishment. However, the responsibility and challenge are enormous when compared with the small number of clinical and basic science investigators in the field. The task ahead must be contrasted with the small size of the research establishment.

NINDB-supported training programs are providing a focal point in 34 university centers for teaching and research in vision and visual disorders. However, in many of the 50 remaining schools there is no focus. To fill some of the manpower needs, the Institute proposes to establish a program of teacher-investigator awards in ophthalmology and the visual sciences. These awards will be for the support of full-time academicians in selected medical centers to promote leadership in the development of programs of undergraduate and graduate training and in the establishment of eye research programs in areas where these are lacking.

In fiscal year 1966, 379 trainees benefited from the Institute's grants in the fields of ophthalmology, ophthalmic basic science, and vision psychophysiology. Eighteen special fellowships were awarded in the areas of neuro-ophthalmology, ophthalmology, ophthalmic pathology, and sensory physiology to prepare basic and clinical scientists for careers in research and academic medicine and related fields. The Institute has given one Research Career Award on sensory physiology (vision). There were 13 Research Career Development Awards and 7 post-doctoral fellowships awarded in ophthalmology and ophthalmological sciences.

RESEARCH

Glaucoma

Glaucoma is an eye disease due to increased pressure of the aqueous fluid within the eyeball which tends to destroy the nerve cells within the retina. If untreated, it leads to impairment of vision and eventual blindness. The major emphasis of NINDB glaucoma research is toward a better understanding of the processes for maintaining proper pressure within the eye, including the early use of medications which save vision by correcting the pressure. Therefore, NINDB researchers are studying the effects of drugs on eye pressure to facilitate early diagnosis. Epidemiologists are defining the characteristics of individuals for whom special vigilance is required because they are especially prone to develop glaucoma.

It is now believed that it will be possible to predict which individuals are prone to develop glaucoma because of the knowledge gained about the genetic and hereditary patterns of this disease. This represents an important advance

in the field of preventive medicine. It means that we may now be able to treat patients at an early stage, thereby greatly reducing the number of people blinded by glaucoma.

This great move forward has been made possible through highly significant studies such as the Collaborative Glaucoma Study and the recently discovered steroid provocative test.

The administration of anti-inflammatory steroids was found to coincide in its effect with that of the standard water-drinking provocative glaucoma test. Minimal, moderate, and maximum responses were obtained, indicating absence or presence of glaucoma. This steroid-induced glaucoma may be the result, according to one hypothesis, of increased rate of production of aqueous humor.

In addition, much progress has been made in our understanding of the basic dynamics of intraocular pressure, and in applicable diagnostic techniques.

Community-wide screening with the aid of tonometry is making it possible to find many victims of glaucoma before the disease has advanced to a stage where vision is affected—often among people who have had no suspicion that they were affected. Continued and expanded epidemiological, genetic, laboratory, and diagnostic studies are needed, however.

In addition to patient and laboratory studies, the Institute is conducting epidemiology studies of chronic simple glaucoma in selected population groups in Pennsylvania and Arizona. Variations in tonometry techniques for measuring eye pressure have been subjected to searching evaluation. Another study of 200 pairs of twins has been established to determine genetic influences in the development of glaucoma.

Cataracts

A cataract is a clouding of the lense of the eye which interferes with normal passage of light rays to the retina.

At the present time, the only known treatment is the surgical removal of the lens. This is a relatively simple operation which has been facilitated in recent years through the use of the enzyme, alpha chymotrypsin, to loosen the lens. At the present time it is possible for even very elderly patients to undergo cataract surgery if their general health is good.

Less well known is the fact that many children are born with cataracts. They will have the best chance to see normally if surgery is performed between the ages of 6 and 18 months, according to recent research findings of NINDB grantees. If congenital cataracts are removed in late childhood, functional results are likely to be poor, these investigators found. On the other hand, the sooner the surgery, the less likely the development of irreversible changes in the eyes.

Over a period of 5 years the case for early surgery was demonstrated in studies of the visual pathways of developing kittens with cataract or artificially induced blindness. These studies demonstrated that if vision is not permitted during the early months of life, the visual pathways do not develop fully. Even though vision is later restored, the essential functional connections may never be established, and there is permanent visual impairment. A similar situation exists if a muscle imbalance occurs which prevents the two eyes from focusing on the same object. If such a squint is permitted to persist too long, the mechanism for the coordination of eye movements is severely retarded, and there is deep-rooted impairment of the ability to develop binocular vision. Accumulated evidence suggested that children whose eyes have been similarly incoordinated since birth will have difficulty with effective binocular vision and the fusion it requires even after the incoordination is corrected.

If few binocular synapses remain in the cortex, even the most skillful balancing of extraocular muscle tensions would cause little more than cosmetic benefits. The earlier the surgery, the less likely the development of irreversible changes in the eyes. Investigators conclude that in such cases, operations between the ages of 6 and 16 months seem advisable.

Research by Institute grantees has provided valuable data on the physical and chemical properties of lens proteins. Since the formation of cataracts is associated with accumulation of insoluble proteins, these data are valuable in understanding cataracts.

Laboratory studies recently revealed the presence of the German measles virus within the cataractous lens of infants whose mothers had the disease early in pregnancy. This finding is extremely important in terms of our understanding the mode of action of this virus in producing cataracts.

Studies indicate that cystoid macular edema, or papilledema, may be present in patients whose vision fails to improve or suddenly decreases after cataract surgery. This is another problem to meet, if sight is to be saved.

Disorders of the Cornea

The cornea is a transparent membrane covering the iris or colored portion of the eye. Similar in size and structure to the crystal of a wristwatch, it acts as a protective window through which light rays pass on their way to the retina. The cornea also helps to bend and focus light rays.

Scarring produced by injury and disease causes 10 percent of the blindness in the United States and much more of the blindness in the Near and Far East. However, new drugs and improved treatments are helping to reduce the amount of this type of blindness.

Viruses. In this country the most common cause of corneal ulcers and blindness is infection with a virus called herpes simplex, which also causes the common cold sore. One of the most significant advances in therapeutics was the discovery several years ago that herpes simplex could be cured by the drug 5-iodo-2-deoxyuridine (IDU). This was the first drug to be proved effective against any virus, and has opened up new approaches into the broader study of antiviral drugs.

Corneal Transplants. When corneal diseases are not treated promptly, they may destroy the cornea's transparency, and cause poor vision or blindness. Fortunately it has been found possible to substitute a healthy cornea for a diseased one.

Some successful corneal transplants have been made for almost 20 years. They are usually performed with corneas taken posthumously from persons who have previously signed statements donating their eyes to eye banks. Recent Institute studies have led to improvement in transplants and in freezing and dehydrating corneas for long-range storage and shipment. This year an improved technique was developed for transplanting which may mean that some cases previously considered hopeless will regain vision.

One of the big problems with conventional transplants is that the cellular layer on the back side of the cornea—the endothelium—easily becomes damaged by a transplantation immune reaction. This results in the accumulation of fluid (edema) in the endothelium of the cornea. Such edema is rarely reversible and usually results in a cloudy graft so that the eye remains blind.

With the new procedure, a thin transparent membrane, made of silicone rubber, is sutured in back of the corneal graft. This serves as a barrier to the influx of fluid from the anterior chamber of the eye. With the insertion of the "fluid barrier," the corneal edema is reduced or eliminated and the graft has a much better chance of surviving.

The silicone rubber membrane adds support and distributes pressure from the sutures evenly over the graft, ensuring smoothness. The transparency of the silicone membrane permits inspection of the wound to observe progress of healing and formation of the anterior chamber. Local medication can be given with normal effectiveness.

While still in the experimental stage, plastic corneal implants have proved their value for a number of persons for periods of time up to 5 years.

Recent improvements in surgical techniques have greatly enhanced the prospects of success in corneal transplant operations, but graft rejection due to auto-antibodies has remained a serious problem. Certain drugs inhibit the induction and production of antibodies, but to determine which are the best drugs and what are the most desirable dosages, it is necessary to have a baseline in relation to which their powers may be tested. Until the mechanism of rejection is known, the choice of drugs must be empirical.

In a series of animal experiments, NINDB scientists augmented the intensity of the corneal graft rejections with simultaneous skin implantations from donor animals to recipients. Such recipient animals uniformly showed graft reactions with complete and sudden clouding of the grafted corneas on an average of 12 days postoperatively. This represented an earlier and more uniform reaction than had been achieved in previous efforts to establish a baseline.

Now it was possible, through a series of controlled experiments, for the investigators to demonstrate that three immuno-suppressive chemicals, namely 6-mercaptopurine—examined in a previous study—azathioprine, and corticosteroids, could delay or even suppress graft rejection in animals. The latter appeared to be the safest and most effective.

The establishment of a baseline for measuring effectiveness of suppressive drugs represents an important step in the development of agents to assure successful corneal transplant surgery.

Retinal Disorders

Although the cornea, lens, and other tissues help convey light through the eye, the actual visual process does not begin until light strikes the retina. This light-sensitive tissue at the back of the globe of the eye is the site of many disturbances which lead to visual impairment. Disorders of the retina include circulatory disturbances, injuries, inflammations, degenerations, detachments, tumors, and congenital anomalies.

Many of these disorders, especially degenerations and anomalies existing at birth, are untreatable by present-day medicine. Therefore, investigators are seeking to understand the basic anatomy and function of the retina, which they feel is necessary before treatment or prevention is possible.

Accurate understanding of retinal topography was increased this year through NINDB studies which systematically evaluated the nature of the retina in a series of eyes obtained through surgical removal and autopsy. This analysis revealed the general size and shape of the retina, the dimensions of the optic disk, and the relationship between the disk and the foveola. Through such topographical studies we shall have a better understanding of the physical and physiological characteristics of the eye.

Retinal Detachment. Retinal detachment is a separation of the innermost layer of the eye, the retina, from the choroid, the layer just behind it. These two layers are usually in close contact; but if the retina should peel away or be pushed up from the choroid, all or part of the vision is blocked out.

Retinal detachment may be due to injury or disease. Changes that occur with age increase the chances for detachment. Persons who are nearsighted or who have had cataract operations may also be predisposed to detachment. Most detachments, however, occur for reasons unknown to medical science.

If treated early, retinal detachment may be arrested by procedures which produce an adherent scar at the point of separation. There have been important advances in the way in which this is accomplished. The retina may be burned by a sharply focused laser beam. More recently, freezing techniques (cryosurgery) are proving highly effective.

Recent advances reported in the use of retinal light coagulation indicate that certain lesions, particularly in cases of diabetic retinopathy, small fundus tumors, and lesions that lead to retinal detachment, may respond in selected cases to light coagulation. In this method, light makes a "spot weld" which, when properly directed, can be used to close off blood vessels, seal a retinal hole, anchor the retina to underlying tissue by scar formation, or necrotize ("kill") small tumors. Certain medical lesions of the fundus may be treated by light coagulation alone; in others, it is necessary to supplement the coagulation effect with heat applied to the posterior scleral surface after surgical exposure. Success with this method depend upon careful selection of patients; all cannot profit from it.

Understanding of retinal detachments was advanced by the evidence that there may be hereditary causes. There is indication of a relationship between myopia and retinal detachment. This was substantiated by a statistical analysis of 1,000 cases.

Diabetic retinopathy. Diabetic retinopathy is a vascular disorder of the eye which occurs in conjunction with diabetes. The condition is caused by balloon-like enlargements (aneurysms) of the capillaries supplying blood to the retina. No effective treatment is currently available. The incidence of this disorder increases with the length of time an individual has had diabetes. For example, in a series of patients who had diabetes for 15 years, 70 percent showed retinopathy, and of those who had diabetes for 25 years, 90 to 95 percent had diabetic retinopathy.

Morbidity statistics indicate that in 1934 the incidence of diabetic retinopathy among diabetics was 17.7 percent; in 1945 it was 29.6 percent; and in 1955 it was 47 percent! Diabetic eye complications are among the leading causes of blindness in the United States.

A few short years ago there was no specific treatment for diabetic retinopathy, but recently a few physicians have had success with removal of the pituitary gland in patients threatened with blindness. Preliminary results have shown improvement in visual acuity with no known harmful effects from the surgery. Nevertheless, further observations are needed before the procedure can be widely recommended.

Future studies are needed to further elucidate the mechanism of diabetic retinopathy and to develop a natural history which will make possible a more precise evaluation of present treatment methods.

A grantee study of the condition of retinal capillaries after the death of diabetic and nondiabetic patients may provide a better understanding of the disorder. Investigators found that in addition to retinal microaneurysms, diabetes is characterized by capillary sheathing and a decrease in the ratio of pericyte to endothelial cells. This blood-vessel damage is not evident in clinical examination, for by the time that capillary lesions become so gross as to be recognized clinically in the form of incipient diabetic retinopathy, the patient already has generalized diabetic microangiopathy (disease of the capillaries).

Retinitis Pigmentosa. Retinitis pigmentosa is an inherited disease that usually produces its first symptom—night blindness—in childhood. Over the years peripheral vision is lost through changes which take place in the retina.

The electroretinogram and a related test, the electrooculogram, have provided very sensitive and accurate measurements of retinal damage to patients. These tests have been helpful to Institute scientists in localizing early retinal damage in the rod photoreceptors rather than in the cones.

A recent study suggests that while the light to which human beings are customarily exposed rarely produces permanent damage to normal eyes, people with inherited night blindness may benefit from wearing dark glasses when exposed to bright light. This may be particularly helpful in cases of a chronic progressive degeneration: subjective symptoms are night blindness, contraction of the field of vision, and diminution of sight.

In this study scientists found that albino rats with normal vision when kept around the clock in light of ordinary brightness developed severe night blindness after only 3 to 5 days of exposure. Given longer periods, up to 3 months, of dark adaptation afterward, these animals recovered very little of their normal sensitivity to light. The visual cells in their retinas were almost completely destroyed by several days of constant exposure to light.

Retrolental Fibroplasia. Retrolental fibroplasia (RLF) was once common in premature infants, until it was discovered through an Institute-supported study that the ocular abnormality was related to excess oxygen consumption.

A recent study of experimental retrolental fibroplasia threw new light on the underlying mechanism of this disease which may also aid in understanding other vascular disorders of the retina. It appears that this blinding disorder may be caused by the same mechanism that produces retinitis proliferans (the late stage of diabetic retinopathy), and blindness following retinal vein occlusion.

Investigators used light and electron microscopy and histochemical techniques to study changes (hyperoxia) produced in retinas of premature kittens and other animals by excessive oxygen. Findings suggest that blood vessel proliferation (reproduction of cells and morbid systs) following hyperoxia might be due to the liberation of some toxic substance by degenerating endothelial vessels.

Recent studies have demonstrated that full-term infants exposed to oxygen therapy are sometimes affected, too. Investigators found that the retina is not fully vascularized until shortly after birth of the full-term infant. Animal experiments have shown that the incompletely vascularized retina is susceptible to oxygen damage.

An Institute workshop planned for 1967 will discuss oxygen use in hyaline membrane disease and its potential for causing RLF.

Diseases of the Conjunctiva

The conjunctiva forms the inner lining of the lids and is contiguous with the lining of the lacrimal apparatus.

Conjunctivitis is a general term covering a number of symptomatic complaints including itching, tearing, and foreign body sensations which are not necessarily due to local conjunctival disease. Conjunctival disorders may be allergic, bacterial, or traumatic. All are inflammatory.

In a 10-year study of kerato-conjunctivitis, a research team recognized 12 distinct clinical and etiologic types of the disease. They learned that adeno-viruses are the principal cause of acute follicular conjunctivitis, and herpes simplex virus the principal cause of keratitis. Keratitis and conjunctivitis caused by other viruses were also studied.

Trachoma

Trachoma, a viral disease which produces scarring of the eyelids and opacification of the cornea, is a prolonged progressive disease which spreads through families and institutions, especially in depressed areas where hygiene is poor. Current World Health Organization estimates indicate that more than 400 million people throughout the world suffer from this disease. The disorder can be cured

by drugs, but there is a lack of natural immunity and frequent reinfection is common.

Much more research is needed to find an effective vaccine for prevention, and therapy for permanent cure, before trachoma can be eradicated. Diagnosis of early trachoma has always been a problem. The development of an immuno-fluorescent technique, however, has been a major diagnostic advance.

This is an area where the ophthalmologic community can make substantial contributions toward the eradication of disease not only in a portion of our own population, but in the undeveloped areas of the world which are looking toward our technology for help.

Under the leadership of the Neurology Institute, the first broadscale scientific survey on the prevalence, causes, and possible means of prevention of trachoma is under way in Egypt. This study of the world's most prevalent blinding disease is expected to yield a store of knowledge. A random sampling of 10,000 of 250,000 inhabitants in two large areas has now been tested for visual acuity and subjected to study, in the survey which will continue for several years.

Although trachoma blinds many people in most parts of the world (the U.S.A. is relatively free of it save among the Indians of the Southwest), Egypt was chosen for the study because trachoma occurs there in epidemic proportions.

Attempts to eradicate trachoma through mass public health programs have been successful only in the more highly developed nations. In other countries such campaigns have either failed to cure or there has been a high percentage of relapsed cases and reinfection. This is true even among Indians in southwestern U.S.

Uveitis

The underlying causes of some types of uveitis (inflammation of the iris), which strikes people in their most productive years, has been found in some cases to be toxoplasmosis, syphilis, or tuberculosis, but the cause of the majority of cases is still unknown.

Several hundred uveitis patients have been admitted to the Clinical Center for close observation and treatment with drugs. Institute scientists were among the first to discover that the infection, toxoplasmosis, is a major cause of uveitis. They concentrated their studies this year on a concerted attack on the disease with use and evaluation of a group of drugs. A new antibiotic was found to be effective when used in combination with the usual treatment for uveitis. The effects of chemotherapy on presumably toxoplasmotic uveitis and the usefulness of antimetabolite treatment on specific types of uveitis appear to hold great promise.

The role of hypersensitivity to disease-producing microorganisms or to altered tissues needs much more intensive study. Animals have been inoculated to produce similar lesions, and such studies should be continued. Extensive epidemiological studies are needed and uveitis clinics are necessary for research.

The Institute's Collaborative Perinatal Project, which studied 60,000 pregnant women and their offspring, has revealed evidence of toxoplasmosis in 1 out of every 2,000 babies. A series of controlled epidemiological studies, to demonstrate more precisely how this infection is transmitted, may do much toward eliminating it.

Exophthalmos

New information on the nature and treatment of dysthyroid (endocrine) exophthalmos, and recent advances in surgical treatment for the condition will bring new hope to victims of this disease, which is characterized by abnormally prominent eyeballs with lid retraction and an excessive accumulation of fluid in tissue spaces.

In two related research projects. Institute grantees succeeded in (1) establishing the site and nature of the changes which take place in ocular muscles in cases of dysthyroid exophthalmos, and (2) tested the chances of success to be expected in this disease. The investigators concluded that surgery is indicated only in the acute phase of the disease, where the cornea and optic nerve are threatened and where other measures appear inadequate.

Antithyroid drugs proved effective in one study of 129 patients whose cases were controlled over a period of years with the drugs. In none of these cases was ocular surgery required nor did the ophthalmology significantly worsen.

In cases where the medical treatment alone does not stop the progress or fails to improve the condition, X-ray therapy to the orbit has been found beneficial.

Angiographic examination (the study of blood vessels of the eye) has proved to

be a safe and valuable method for establishing the nature of unilateral exophthalmos.

Various studies have demonstrated the promise in potential application of ultrasound when combined with other ophthalmologic techniques in dealing with the disease.

In one study, a basic problem in surgical correction of the severe limitation of elevation so frequently seen in the end stages of this disease was found to be the fibro-adhesive connections between the interior rectus and inferior oblique muscles and to the orbital floor. In a new method of surgery, these adhesions are separated with recession of the inferior rectus, and in some patients, recession of the medial rectus. Improvement was obtained in all cases.

Tumors

The more enlightened management of ocular neoplasms, based on better knowledge of their biological behavior, constitutes one of the major advances that have been made in clinical ophthalmology. Refinements in diagnosis of intraocular tumors, which too often lead to serious visual loss and may also create life-endangering situations, have been achieved through long-term studies by Institute scientists and grantees. The relatively benign character of certain tumors of the uvea, conjunctiva, eyelid, orbit, and lacrimal gland has become widely appreciated and efforts are being made to develop more conservative techniques in their treatment. Other tumors are being recognized as highly malignant cancers requiring early radical surgery if the patient's life is to be saved.

As examples, characteristics of malignant tumors of the choroid may now be identified preoperatively by the use of new techniques and instrumentation. In a system developed in the ultrasonic laboratory, an ultrasonic record is produced which has the appearance of an active photograph of the diseased tissue or tumor of the eye. This facilitates recognition of characteristics of different tissues.

Radiation therapy has been reported 84 percent successful in one experimental project in initial and secondary treatment of patients with retinoblastoma (tumor of the retina). This was the first time that supervoltage irradiation had been used exclusively in a uniform manner. The project was reported after patients had been observed for a period of 6 years with no deaths and with generally useful vision.

Far more sophisticated methods of diagnosis and detection of malignant tumors of the eye are urgently needed. While the new methods, using fluorescent dyes and radioactive tracers, appear to hold great promise, more specialized tumor diagnostic centers are needed. The lack of experimental models has hindered investigation of the basic dynamics of tumor growth and development.

Refractive Anomalies

This year, as part of its program to promote exchange of information and generate new research approaches, the Institute has supported a workshop on refractive anomalies of the eye. Considered by approximately 30 specialists from various parts of the world were such eye disorders as hyperopia, myopia, presbyopia, astigmatism, and anomalies of the accommodative and convergence mechanisms. Recommendations for further research into these eye conditions, which affect more than 90 percent of the Nation's population, were made regarding the mechanisms giving rise to the dysfunctions and diseases, diagnostic and therapeutic techniques available, and promising areas for future investigation.

In recent years, important advances have been made in the ability to correct errors of refraction, such as myopia (near-sightedness), which range from minor problems to serious involvements, some of which lead to severe visual impairment. So, too, has there been advancement in the design of instrumentation needed to exploit these new developments. Lasers, X-rays, and ultrasound have all been used successfully.

Several grantees are studying how the retina codes light impulses into electrical messages as well as how the brain decodes the message and produces the image we call vision.

Studies of the relation of the vision mechanism to perception of time, space, color, brightness, and form continue to receive support.

Institute grantees are investigating optics and refractive disorders. The use of high speed computers and ultrasound to measure different parts of the eye may lead to greater understanding of these areas. Other investigators are studying the muscles which move the eye.

Much of the work of Institute grantees has been directed to mapping the visual impulse through the retina and various nerve pathways in the brain. The

knowledge that has been gained from these studies has contributed greatly to understanding of the nervous system as well as the visual function. It has been shown, for instance, that there is an independent nerve pathway for the eye to pick up and follow roving objects.

Color Vision

Investigations have added to the information on the chemistry and other properties of the pigments in the human eye on which color vision depends. The spectra of these pigments have been determined by direct microspectrophotometry and their composition determined in part by direct regeneration experiments. Also a simple psychophysical procedure has been designed that isolates the action spectra of these pigments in living subjects. This makes it possible to measure the color vision pigments and their properties in the eyes of normal, color-blind, and color deviating subjects. The information so obtained has implications for the genetics of inherited types of color defective vision.

Microspectrophotometric measurements upon the outer segments of the cones of primates and of fish which appear to be able to distinguish colors in the same manner as humans have explained color vision at the receptor level; these animals possess three classes of cones, each of which absorbs light maximally in a different part of the spectrum. However, electrophysiological studies in both fish and primates have shown that the different classes of receptors are not connected by separate pathways to the brain. Instead, opponent pairs of receptor types exert the antagonistic effects of excitation and inhibition upon the retinal ganglion cells.

It has been incontestably demonstrated that topical administration of certain adrenocorticosteroids produces in some individuals an increase in intraocular pressure. Were it possible to find a drug with anti-inflammatory activity, yet free from intraocular pressure

It has been incontestably demonstrated that topical administration of certain adrenocorticosteroids produces in some individuals an increase in intraocular pressure. Were it possible to find a drug with anti-inflammatory activity, yet free from intraocular pressure-increasing effect, the result would be both a beneficial therapeutic agent and a valuable investigative tool. Some success with such a medication, a synthetic steroid called medrysone, has been reported. Administration of this drug was not associated with rise in intraocular pressure in either glaucoma patients or normal volunteers.

A new synthetic steroid called medrysone was successfully used with glaucoma patients and normal controls. This drug has anti-inflammatory activity yet is free from the intraocular pressure-increasing affects which characterize certain other drugs used to control glaucoma. It should be a valuable investigative tool as well as a beneficial therapeutic agent.

Because a number of drugs being used in the treatment of systemic disease may have dangerous side effects on the eye, it is important that these side effects be recognized at the earliest moment in order that blindness may be prevented. For example, chloroquine, used to treat arthritis and lupus erythematosus, produces eye damage if given in large doses over prolonged periods of time. The most serious, and irreparable damage is that which occurs to the sensitive neural film—the retina of the eye. A simple test has now been devised to recognize this dangerous reaction in its earliest stages.

To be treated are a continual stream of individuals from all walks of life who have been exposed to an unbelievable array of toxic agents, the actions of which are only partially understood and for which we have few antidotes.

Expanded research dedicated toward the development of new and effective pharmaceuticals for the treatment of many eye disorders is of at least equal importance. It is to the national interest to develop more active programs dealing with these critical problems.

Instruments and Techniques

Increasingly, psychology and engineering are joining forces with medicine and surgery to find the answers to problems of vision. While scientists keep their sights on prevention and treatment of eye disorders, they also look forward to the day when an artificial eye may be developed, perhaps with the characteristics of a miniature TV camera, which can replace a faulty human eye. So positive are scientists that this may become a reality that definite planning is under way to lay the groundwork for this accomplishment. Meanwhile, many new instruments and techniques have been developed which are helping physicians in their treatment of patients with visual disorders.

Just recently a grantee designed and built a retinal densitometer with which he can measure in 10 seconds the amount of visual pigment upon any selected region of the human retina. With this he is measuring visual pigments, and is studying bleaching and visual function and the electrophysiology of the retina.

An instrument for measuring corneal thickness by optical means has been developed. This type of apparatus can be used on any modern slit lamp. It increases the accuracy of this type of measurement in normal corneas and those which are opaque. It practically eliminates distortions present in older instruments. It assures that the measurement is being made while observing the cornea at exactly the right angles.

A model of the retina has been developed. Electro-oculography has been developed as a technique for clinical usefulness in understanding rod and cone anatomy and connections.

SUMMARY

As can be seen from this brief review of the field of vision, the research is extremely complex and the causes of blindness many. Unsolved problems in the field are legion, but there are many hopeful elements: great strides in research have been made in the last few years; there are now more well-trained investigators available than at any previous time; more research projects are underway than ever before; and there are more well-equipped eye research centers. This does not mean that the needs for manpower, money, and facilities have been met, but rather that research is moving in the right direction.

COLLABORATIVE PERINATAL PROJECT

Dr. MASLAND. At the present time a number of research opportunities are at hand for the Institute which could lead to similar advances. Within the collaborative perinatal project, detailed pregnancy and obstetrical histories have now been recorded on over 60,000 women.

The analyses of these data are serving to dramatize the importance of a number of previously suspected factors causing perinatal injury of the brain.

PREMATURITY: CERVIX INCOMPETENCY

The greatest single factor associated with birth defects appears to be prematurity. One of its causes is incompetent cervix.

Recent studies have shown that a relatively new surgical treatment for incompetent cervix has increased the neonatal survival rate and decreased fetal loss and neurological abnormality. As more attention is given to the potential of this comparatively simple surgical procedure, many birth defects should be avoided and many babies' lives saved.

Senator HILL. We have not been in this field too long, have we?

PROJECT CONTRIBUTIONS

Dr. SHANNON. The perinatal project was, really, the first major step to advance our knowledge. I think it is now providing very important information as the basis for the development of further studies and for management programs in this area.

SIGNIFICANCE OF KNOWN AND SUSPECTED FACTORS

Dr. MASLAND. The study is contributing in several ways. In the first place, it is providing for clarification of the importance of known and suspected factors such as the incompetent cervix. This has been recognized as a cause of difficulty for some time, but our study is highlighting that it is a significant cause, and that it is quite probable that a proper remedy can reduce the number of defective children.

RECOGNITION OF HIGH-RISK SITUATIONS

The second thing that the study analyses are doing is to help us to recognize the high-risk situations. The Children's Bureau is picking up these facts and is putting them to use.

Senator HILL. They haven't been doing that too long, have they?

Dr. MASLAND. It is just getting started. We made an analysis of 40 maternal deaths. Twenty-eight of these could have been recognized at the time that the women came for obstetrical care, as high-risk cases.

Incidentally, only three of the 40 women who died indicated that they had desired their pregnancy.

REVELATION OF CONGENITAL TOXOPLASMOSIS

Other research on the project has revealed a significant incidence of congenital toxoplasmosis (an infection of the newborn). Since a relationship to this infection and various abnormalities has been found, efforts are now being directed toward determining the mode of transmission of the infection and means for its prevention and treatment.

POSSIBLE LATENT VIRUS CAUSE OF SCLEROSAL DISEASES

One of the Institute's greatest research opportunities relates to slow and latent viruses as a possible cause of multiple sclerosis, Parkinson's disease, and amyotrophic lateral sclerosis. These viruses are called slow and latent because of their long incubation period. The program has been underway since 1962.

KURU: MYSTERIOUS DEGENERATIVE DISEASE ENDEMIC TO NEW GUINEA
RESEMBLING MULTIPLE SCLEROSIS

This past year there was a significant research accomplishment—the transmission of a degenerative neurological disease of humans to laboratory animals. Kuru, a mysterious degenerative disease of people in New Guinea, was transmitted to chimpanzees. The condition bears some resemblance to multiple sclerosis and suggests that multiple sclerosis may have a similar basis.

EXAMPLE OF ESSENTIAL INTERNATIONAL NATURE OF MEDICAL SCIENCE

Dr. SHANNON. Could I interrupt at this point, Senator Hill?

Senator HILL. Yes.

Dr. SHANNON. I think this is an extraordinary example of the value of studying diseases in other environments.

Kuru is a disease that is endemic in New Guinea. We joined with the Australians over a period of some 3 or 4 years in the study of this disease. Had we approached kuru as a problem primarily for New Guinea, rather than as a unique natural opportunity for us to explore a disease in an exotic environment, this very dramatic result would not have been possible.

Senator HILL. Would not have been possible?

Dr. SHANNON. No, sir. I think there are many other examples one could cite, but perhaps this is the most dramatic example of the essentially international nature of the medical sciences and of the need

to take advantage of international experiments that permit definitive results that are quite impossible within the framework of our domestic research.

Senator HILL. I am glad you brought that up, sir, that is important.

INFECTIOUS PROCESS AND CLUE TO OTHER CONDITIONS

Dr. MASLAND. I think, Mr. Chairman, that there are two important implications of Dr. Shannon's comment.

We have discovered this to be an infectious process. This means that, as with any infection, it is better to stamp it out at the source than to wait with the possibility that it may spread.

The other thing is, as indicated here, it provides an important clue to a number of other conditions for which a similar approach might be pertinent.

RESEARCH CONDUCTED AT PATUXENT, MD., LABORATORY

ANIMAL HOLDING FACILITY INADEQUACY

The Institute's virus program is being conducted at a special laboratory established at Patuxent, Md., in cooperation with the Department of Interior's Fish and Wildlife Service. The major need for the development of this program is adequate animal-holding facilities. Space must be large enough to accommodate a number of animals of various species over a 5- to 10-year period following inoculation. These animals must be kept in isolation and free from contamination and in a manner which will not endanger the scientists conducting the research or the public.

TRANSMISSION OF DISEASE AGENT TO CHIMPANZEES

Senator HILL. What animals do you have in mind, particularly, Doctor?

Dr. MASLAND. To date, the agent responsible for kuru has only been transmitted to chimpanzees. We are making active efforts to transmit it to a number of other types which would be less expensive and easier to handle. We have inoculated a great variety of primates, a variety of the ordinary barnyard animals, as well as the ordinary laboratory animals, but so far the chimpanzee is the only animal which has proved susceptible to kuru.

Senator HILL. Where you get most of these chimpanzees from?

Dr. MASLAND. They have to come from Africa, and it is a problem. We need to consider whether a source of supply should be established in this hemisphere.

DISEASE UNIFORM FATALITY AND INFECTIOUSNESS

Dr. SHANNON. This points up another general problem. Kuru is a uniformly fatal disease. In its native form, it attacks a surprisingly high percentage of inhabitants of a given village.

PROTECTION OF LABORATORY WORKERS AND SURROUNDING COMMUNITY

This points up the need to isolate these laboratory animals in order to protect the laboratory workers and the helpers in the surrounding community. A similar need exists in the cancer field, where we must

provide for protection from hazardous material. We must provide much more in the way of biological containment than we have been able to develop at the present time.

Actually, much of the work going on at the Cancer Institute, with reference to biological containment, will have direct bearing on this problem.

One is dealing here with long-term containment, which poses a serious problem relative not only to the workers but to the immediately surrounding community.

Senator HILL. All right, Doctor.

ESTABLISHMENT OF HEAD INJURY SECTION

Dr. MASLAND. In response to the large national problem of death and disability resulting from head injury, the Institute has established a section on head injury to explore the nature of cerebral trauma, its management, treatment, incidence, and prevention.

An Institute conference, sponsored by four of the major national societies, reviewed the field early in 1966, and many of the recommendations are being implemented.

To cope with the problem of head injury, much more needs to be known about where accidents occur, how persons are transported to hospital facilities, who is available to treat the patients, and how they are treated.

CLINICAL RESEARCH CENTERS

In response to the directive of the Congress last year, specific clinical research centers are being established and others are being reorganized to take advantage of all current knowledge and apply it to the day-to-day problems of the head injury patient.

Senator HILL. This gets to be a bigger problem every day, doesn't it?

BETHESDA LABORATORY BASIC RESEARCH PROGRAM

Dr. MASLAND. Yes, sir; it is very serious.

At the same time these clinical aspects of the problems are being studied, the Institute is moving forward with its Bethesda laboratory program of basic laboratory research on brain tissue reaction to head injury. This program includes studies of factors causing brain swelling and the reparative processes active in regrowth of tissue and restoration of function to the brain and spinal cord.

Knowledge of the relationship between impact and physiological response will ultimately play a major role in determining the proper management and treatment of head injuries, as well as aid in the development of more effective protective devices. The resources and collaboration of industry are also being utilized.

MULTIDISCIPLINARY ATTACK ON BLINDNESS

To provide a more effective national program to combat blindness, the Institute has taken important steps to mobilize a broad multidisciplinary attack.

EYE RESEARCH CENTERS

Now 11 eye research centers are being supported by the Institute. Senator HILL. Will you supply, for the record, just where these centers are.

Dr. MASLAND. Yes.

(The information follows:)

LOCATION OF NINDB VISION PROGRAM PROJECTS AND CLINICAL CENTERS

Retina Foundation, Boston, Massachusetts	Francis I. Proctor Foundation, University of California, San Francisco, California
Neurosensory Clinical Research Center, State University of Iowa, Iowa City, Iowa	University of California, Los Angeles, California
Sensory Disease Clinical Research Center, University of Chicago, Chicago, Illinois	Glaucoma Clinical Research Center, Washington University, St. Louis, Missouri
Research Center for Corneal Disorders, Columbia University, New York, New York	Mt. Sinai Hospital, New York, New York
Massachusetts Eye & Ear Infirmary, Boston, Massachusetts	Johns Hopkins University, Baltimore, Maryland
Institute of Visual Science, San Francisco, California	

BLINDNESS STATISTICS REPORTING AND OVERVIEW OF VISION PROGRAM

Dr. MASLAND. The Institutes Model Reporting Area for Blindness Statistics has now been extended to 14 States. And a special vision subcommittee of the Institute's National Advisory Council has now been established to provide an overview of the Institute's vision program.

OUTPATIENT VISION RESEARCH UNITS

The most recent program development has been the establishment of eight out-patient units for vision research. Here, thousands of persons whose eye disorders do not require hospitalization can be studied in a more organized fashion by physician-scientists seeking clues to ocular disease.

Senator HILL. That sounds like an important movement to me.

Dr. MASLAND. Yes, sir; it offers us an opportunity to study patients who don't require hospitalization.

Senator HILL. And there are many of them.

Dr. MASLAND. Yes, particularly in the eye field.

PROPOSED CREATION OF EYE RESEARCH PROGRAMS

The Institute has also proposed the creation of a limited number of comprehensive eye research programs. Located initially in three or four diverse geographic areas, these would make possible the immediate application of research findings to individuals at the community level, and provide needed facilities for basic and clinical research.

BUDGET REQUEST FOR PILOT STUDY

Senator HILL. Do you have funds in the budget for this purpose?

Dr. MASLAND. We have funds in the budget to provide for pilot studies along these lines.

STROKE: INDIVIDUAL GRANTS AND RESEARCH CENTERS

Stroke has been recognized by the Institute as a major health problem for many years and an extensive program of individual grants and research centers has been developed. At the present time there are 16 active centers located in major population centers of the country, and the Institute is prepared to increase and accelerate these activities as needed.

PROGRAM FUNDING

Senator HILL. When you say "increased consideration," do you have funds in this budget to do that?

Dr. MASLAND. There, again, Mr. Chairman, it can be carried forward on a limited basis.

EPILEPSY PROGRAM

The Institute's program in epilepsy is built upon a broad base of individual research project grants and research projects within the Institute's laboratories at Bethesda. To provide focal points for a broad, interdisciplinary attack on the problem, a number of clinical and basic research centers have been established.

This year a pilot project on the study of petit mal epilepsy was launched involving the cooperation of four extramural facilities. A standard therapeutic baseline for investigations into the control of seizures is sought.

The Institute is also working closely with the Advisory Committee on the Epilepsies appointed by the Surgeon General in the formulation of an overall plan for research in this area.

NEUROLOGICAL CONTROL LABORATORY

New techniques of neurological control hold exciting possibilities for the development of an artificial eye, a hearing device for the deaf, and means of movement control for the physically handicapped.

To exploit computer techniques for a more sophisticated analysis of the nervous system and its functioning, a Laboratory of Neurological Control is planned by the Institute within its Bethesda program. This new program will be launched upon completion of NINDB's new laboratory building and selection of trained personnel to develop these new concepts.

Senator HILL. When do you expect that building to be completed, Doctor?

Dr. MASLAND. We should be entering the building in January of 1968.

PROGRAM PERSONNEL

Senator HILL. How long will it take you to recruit the personnel?

Dr. MASLAND. We are starting right now to recruit the key people for this program. It provides us with an opportunity we have not had for quite a few years to develop certain important new facets of the program.

Senator HILL. Do you find much difficulty in recruiting personnel?

Dr. MASLAND. Yes, we do. There are qualified people, Mr. Chairman, but the problem is competition for the really leading people that we

feel are essential to our program. Our opportunities are scientifically challenging and attractive, but with the salary level as it is we cannot attract the best.

Senator HILL. Off the record.

(Discussion off the record.)

Senator HILL. On the record.

Go ahead, Doctor.

EARLY RECOGNITION OF CHILD HANDICAPS

Dr. MASLAND. Another challenge for the Institute is the growing awareness of the need for early childhood recognition of speech, language, hearing, and vision problems, as well as possible minimal brain dysfunction. All present studies point to the need for these examinations to be conducted during the 3- to 5-year period in the life of the child, or earlier, in order that necessary therapy may be instituted and the child may be readied for a normal school environment.

AVAILABLE THERAPY EVALUATION

Because of the need for effective therapy for the child with motor deficits, such as cerebral palsy, and because of the controversies present in this area, it may be necessary for the Institute to initiate a controlled study to evaluate available therapy.

ADVISORY COUNCIL SUBCOMMITTEE ON HUMAN COMMUNICATION

To review the entire field of human communication, an Advisory Council Subcommittee was established in 1965. It has made a number of recommendations and will provide an extensive outline on needs by 1968.

Senator HILL. This is a subcommittee of the council?

Dr. MASLAND. Yes. We have established subcommittees to advise us in several important areas.

Senator HILL. How many do you have on your council now?

Dr. MASLAND. Twelve.

Senator HILL. How many on the subcommittee?

Dr. MASLAND. The subcommittee comprises two members of the council, and usually four to six consultants. However, in making their recommendations, they interact widely with other members of the scientific community.

The recommendations of the subcommittee on vision, for example, have been derived from the consultations with over 250 of the leading research scientists.

Senator HILL. Over 250 members? You brought them in and consulted with them, got their views, suggestions and ideas?

Dr. MASLAND. Yes, to make these recommendations as imaginative and broad as possible.

Senator HILL. Yes.

ADVANCED RESEARCH TRAINING

Dr. MASLAND. To supply manpower for this continually evolving program, the Institute is now providing advanced research training for over 1,500 scientists.

Senator HILL. That doesn't mean that you will have this 1,500 in your Institute, does it?

Dr. MASLAND. No, sir, but it does mean they will be available.

For example, we know that over the course of the Institute's history, we have trained 1,500 men in ophthalmology alone.

Many of these people, because of the present situation, are having to be involved at least part time in private practice and other activities. They would be available, for example, for a strengthened program in our research. They could be drawn back into research.

Senator HILL. What year was your Institute established, Doctor?

Dr. MASLAND. 1950.

TRAINING TIME REQUIREMENT

Dr. SHANNON. Could I comment on the numbers, Senator Hill? I am always distressed by the numbers. The training of individuals for effective work in neurological sciences involves a basic training period of some 3 years, and not infrequently it will involve an additional 1 or 2 years in a postdoctoral fellowship.

The total experience can take as long as 5 years which, of course, affects what I call the through-put of the system. This means that with 1,500 now in training approximately 300 trained individuals are being turned out each year by these programs. The latter figure puts in better perspective the contribution now made by the training program.

Senator HILL. I see. All right, Dr. Masland.

BUDGET REQUEST

Dr. MASLAND. The request for the National Institute of Neurological Diseases and Blindness for 1968 is \$128,633,000—

Senator HILL. You mean the budget request. Your request is \$134 million?

Dr. MASLAND. Yes, sir.

Senator HILL. I don't think it is necessary for you to accept the onus of the budget.

Go ahead, sir.

Dr. MASLAND (continuing). Compared to the 1967 operating level of \$113,244,000. The 1968 budget request contains increases of \$15,389,000 including: \$12,920,000 for research grants; \$130,000 for research fellowships; \$147,000 for training grants; \$1,512,000 for direct research; \$415,000 for collaborative research and development; \$37,000 for biometry, epidemiology, and field studies; \$1,000 for direct training; \$209,000 for review and approval of grants; and \$18,000 for program direction.

I shall be happy to answer any questions.

BUDGET BUREAU REDUCTION

Senator HILL. Doctor, I note the Department didn't cut your request much, and then the Budget Bureau cut was \$5 million.

What will be the effect of that?

Dr. MASLAND. Mr. Chairman, there are several aspects of these cuts. This involves approximately \$1 million from our direct operation.

As I indicated a minute ago, we have at this time a unique opportunity relative to the completion of our new laboratory, and the funds required for this—the million dollars in our direct operating budget would be available for the development of certain of the new programs which could be housed in our new building starting in January.

Senator HILL. This coming January?

Dr. MASLAND. Yes, sir. There are three new programs which are of particular importance, which would make it possible for this new laboratory to serve as the focal point for national programs of considerable importance.

NEURO-OTOLOGY PROGRAM

The first is our program in neuro-otology to study the nervous mechanisms involved in deafness.

NEUROLOGICAL CONTROL MECHANISMS

The second new laboratory that we propose to establish has a unique potential. We are speaking of this as a laboratory for the study of neurological control mechanisms. The nervous system is a complicated control system. Derangements of this system lead to paralysis or sensory loss. We believe that by developing an intimate knowledge of how these control mechanisms operate, we have the opportunity to supplement them when they are deranged.

Senator HILL. Yes.

Dr. MASLAND. In other words, for the person whose movement control is deranged, possibly a supplementary mechanism could be used to boost these movements.

Similarly, in the distant future at least, there is the capability to provide an artificial eye or artificial ear to provide an alternative input. We are already in the planning stages for this type of instrumentation. It may be a long way off, but if we don't start, we will never get there.

Senator HILL. That's right.

NEUROPHARMACOLOGY

Dr. MASLAND. The third laboratory is a laboratory for neuropharmacology.

I mentioned yesterday in response to your inquiry that in relation to diseases, such as epilepsy and Parkinsonism, we have certain clues as to chemical derangements which are remedied to some extent by the use of drugs.

We believe that this avenue of attack needs to be strengthened, and we have an opportunity to establish an intramural laboratory of neuropharmacology. Through contracts and other relationships with industry, we can provide a strong push for this neglected area of the Institute's program.

Senator HILL. You say you have the opportunity, but do you have the funds?

Dr. MASLAND. With this reduction you speak of, this would have to be carried forward on a very limited basis. We won't be able to do all of those things.

TRAINING

In regard to these reductions, in the training area there was a reduction of \$400,000. This involves approximately 20 new training centers that might be established.

GRANTS

There were additional reductions in the regular grants area. You recall that this year, under the recommendation of the Congress, we established a new program for head injury.

Senator HILL. Yes.

Dr. MASLAND. This program has been developed very aggressively. It is moving ahead quite rapidly. However, various factors will affect the extent to which it can be carried forward next year, particularly in certain followup studies that we are anxious to do. We certainly won't be able to do all of these things.

Senator HILL. The funds you requested would allow you to go ahead at the pace at which you think you should proceed?

Dr. MASLAND. Yes, sir.

NEUROLOGICAL CONTROL MECHANISMS

Senator HILL. Speaking about head injuries, so far as restoring functions to a person who has suffered brain damage, you feel you could do much more if you had more money, right?

Dr. MASLAND. That relates to this program on neurological control mechanisms.

Senator HILL. Yes.

Dr. MASLAND. We have carefully studied the potential of the nervous system for regrowth. Although in lower animals the nervous system can replace itself and grow back, in human beings and higher mammals this does not seem to be the case.

LOWER ANIMAL NERVOUS SYSTEM REGROWTH

We are attacking this in various ways. First, we are studying the process by which the nervous system does grow back in the lower animals.

Senator HILL. When you say "lower animals," what do you mean?

Dr. MASLAND. Amphibians, frogs, and fish. Their nervous systems will grow back, but not in mammals.

The fact that the nervous system doesn't grow back doesn't mean there is nothing to be done for the brain-injured individual.

REEDUCATIONAL METHOD EVALUATION

Much can be done to restore the remaining structures to their fullest capability.

So the second facet of our program is a critical evaluation of methods of reeducation.

ALTERNATIVE OR SUPPORT CONTROL SYSTEMS

The third approach is the development of alternative or supportive control systems for the nervous system.

For example, as a demonstration, a member of my staff has a means whereby he can operate his radio key simply by the movements of the muscles of his upper arm through the utilization of electronic amplifiers, and he operates the key directly without having to move his hand.

We believe that people who are crippled might have their usefulness greatly increased by the use of some of these alternative methods of output and input into the nervous system.

Senator HILL. That is a most interesting and challenging field.

Dr. MASLAND. It is a new area.

Senator HILL. A new concept; isn't it?

Mr. MASLAND. It is a new concept, with potential for industry and computers. We think it could be developed.

EFFECT OF IMMEDIATE HANDLING OF INJURED

Dr. SHANNON. I would like to point out another area. There is growing evidence that the handling of the casualty in the early hours subsequent to the injury can be the determining factor in the extent of the eventual disability.

Senator HILL. Yes.

INJURY PROGRESSION

Dr. SHANNON. There is no doubt that there is marked progression of the injury as time progresses. On the other hand, we are completely unable to understand the physiological basis for this.

There are a number of highly sophisticated areas—very important to preventive medicine—that must be studied to understand the underlying causes and enable us to retard this progression, so that the disability of the individual after the injury will be substantially less than it otherwise would be.

Senator HILL. In other words, time can be a vital factor?

Dr. SHANNON. Yes, sir.

BRAIN SWELLING FROM ASPHYXIATION

Dr. MASLAND. We have some important new information on this which has just come to me from our Puerto Rico laboratory.

Senator HILL. What is that, Doctor?

Dr. MASLAND. In that laboratory we have been studying brain injury at the time of birth. We have been surprised that we have not observed brain swelling in the animals that have been asphyxiated experimentally. We couldn't understand why.

Now we have learned that it depends upon the duration of the injury. If the period of asphyxiation is brief, it does not occur. But when you have a long, continued trauma, such as may be induced by improper use of drugs that produce uterine contraction, then the animals show brain swelling.

DELIVERIES BY FORCEPS AND CAESARIAN SECTION

Senator HILL. Let me ask you this: Does the delivery of a baby by forceps invite much danger so far as the brain and the neurological system is concerned?

Dr. MASLAND. Mr. Chairman, this depends on the skill of the obstetrician and the nature of the labor process. We hope we will have further evidence on this from our perinatal project.

The indications are that where forceps are applied properly, and for the proper indications, they may actually provide a protective effect for the child.

Senator HILL. How do you mean "protective"?

Mr. MASLAND. The forceps are applied around the child's head, and as the head is drawn forward, they prevent the head from being pounded against the floor of the uterus.

Senator HILL. How about the cesarean delivery?

Dr. MASLAND. There, again, it depends on the indications. This is also something we are studying; namely, the usefulness of various kinds of anesthesia for delivery.

Senator HILL. Yes.

Dr. MASLAND. It has been known for some time that babies delivered by cesarean section under local anesthesia appear to do better than when the mother is anesthetized by general anesthesia.

Senator HILL. You don't get the nausea?

Dr. MASLAND. We don't know what the mechanism is, but babies delivered by local anesthesia do better.

MULTIPLE SCLEROSIS

Senator HILL. Doctor, you didn't mention much about multiple sclerosis. Have you established a center for this disease?

Dr. MASLAND. We have a center for neurological disorders at Albert Einstein where a very strong program for research relating to multiple sclerosis is being developed.

Our work in multiple sclerosis relates very closely to the research I spoke of on the degenerative diseases of the nervous system. For example, the virus work that I referred to earlier relates to multiple sclerosis, as well as Parkinsonism, amyotrophic lateral sclerosis, and certain diseases of childhood.

Senator HILL. You are working on that now?

Dr. MASLAND. Yes, in the Patuxent Laboratory.

Senator HILL. Which you referred to yesterday?

Dr. MASLAND. Yes.

UNOBLIGATED FUNDS

Senator HILL. I notice you have an unobligated balance of \$2,482,000. Were you unable to use these funds, or do you think they will be used on the unpaid training and research applications, or what?

Dr. SHANNON. May I answer that question, sir?

Senator HILL. Yes.

Dr. SHANNON. This is part of the reduction in expenses which was imposed by the Department. This represents a part of our share in those savings. They were distributed among the programs so as to do the least harm possible.

I don't believe that any of the witnesses would say that it would be impossible to spend those funds effectively if they were available.

I think this general statement holds good for each of your appropriations.

Senator HILL. When you speak about expenses, what do you refer to there, particularly?

Mr. CARDWELL. As part of the President's efforts to reduce expenses in the fiscal year 1967, in the face of growing inflation, which occurred primarily last year, he asked the Department of Health, Education, and Welfare, among the other major departments, to identify savings that could be realized during the year with a minimum program impact. We developed a plan and presented it to the President. Among the items called for in the plan was to hold continuation costs for research grant and training activities to the level of the budget estimate as presented to Congress, if that level happened to be lower than the then current estimate of the National Institutes of Health, or any other activity of the Department.

Now, normally, the differences between these estimates would have become available for new project grants, but we froze that money in place uniformly across the Department, and it happened in this instant to affect this particular institute.

This was a one-time program, and we do not anticipate we will do the same thing in the future.

Senator HILL. You do not anticipate it in the coming fiscal year?

Mr. CARDWELL. The 1968 comparable moneys would be free.

Senator HILL. Do you have anything to add, Doctor?

Dr. MASLAND. No, sir.

Senator HILL. Thank you for a very fine statement.

We will stand in recess for about 1 minute.

(Whereupon, a short recess was taken.)

NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES

STATEMENT OF DR. DORLAND J. DAVIS, DIRECTOR, ACCOMPANIED BY DR. JAMES W. COLBERT, ASSOCIATE DIRECTOR FOR EXTRAMURAL PROGRAMS; WALTER H. MAGRUDER, EXECUTIVE OFFICER; MARTIN J. FULLER, BUDGET OFFICER, NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES; DR. JAMES A. SHANNON, DIRECTOR; RICHARD L. SEGGER, EXECUTIVE OFFICER; LELAND B. MAY, ACTING FINANCIAL MANAGEMENT OFFICER, NATIONAL INSTITUTES OF HEALTH; DR. LEO J. GEHRIG, DEPUTY SURGEON GENERAL; CHARLES MILLER, CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

PROGRESS AGAINST INFECTIOUS DISEASES

Senator HILL. The committee will kindly come to order.

Doctor, we are glad to have you back with us.

Dr. DAVIS. Thank you, Senator Hill, it is a real privilege to testify before you. We appreciate your deep interest.

Senator HILL. Thank you, sir; we are delighted to have you here.

APPROPRIATION ESTIMATE

NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES

For expenses, not otherwise provided for, necessary to carry out the purposes of the Act relating to allergy and infectious diseases, ~~[\$90,670,000]~~ \$94,422,000 of which \$500,000 shall be available for payment to the Gorgas Memorial Institute for maintenance and operation of the Gorgas Memorial Laboratory.

Amounts available for obligation

	1967	1968
Appropriation.....	\$90,670,000	\$94,422,000
Comparative transfers within NIH.....	-3,250,000	0
Transfer to "Operating expenses, Public Buildings Service" General Services Administration.....	-12,000	0
Total.....	87,408,000	94,422,000

1962 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Grants, research.....		\$49,006,000		\$52,936,000		+\$3,930,000
General research support grants.....		(4,576,000)		(5,325,000)		(+749,000)
Gorgas Memorial Laboratory.....		(500,000)		(500,000)		(0)
Categorical clinical research centers.....		(1,100,000)		(1,100,000)		(0)
Scientific evaluation.....		(50,000)		(50,000)		(0)
Fellowships.....		3,700,000		4,267,000		+567,000
Training.....		9,103,000		9,251,000		+148,000
Direct operations:						
Laboratory and clinical research.....	556	12,488,000	567	13,746,000	+11	+1,258,000
Collaborative research and develop- ment.....	33	9,954,000	35	11,025,000	+2	+1,071,000
Biometry, epidemiology, and field studies.....	80	1,289,000	80	1,356,000	0	+67,000
Review and approval of grants.....	57	1,358,000	57	1,482,000	0	+124,000
Program direction.....	25	346,000	25	359,000	0	+13,000
Total obligations.....	751	87,244,000	764	94,422,000	+13	+7,178,000
Unobligated balance, reserve.....	0	164,000	0	0	0	-164,000
Total, obligations and balance.....	751	87,408,000	764	94,422,000	+13	+7,014,000

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	751	764	+13
Full-time equivalent of other positions.....	5	6	+1
Average number of all employees.....	712	720	+8
Personnel compensation:			
Permanent positions.....	\$6,063,000	\$6,133,000	+\$70,000
Positions other than permanent.....	39,000	51,000	+12,000
Other personnel compensation.....	133,000	133,000	0
Total personnel compensation.....	6,235,000	6,317,000	+82,000
Personnel benefits.....	704,000	718,000	+14,000
Travel and transportation of persons.....	270,000	300,000	+30,000
Transportation of things.....	60,000	60,000	0
Rent, communications, and utilities.....	198,000	210,000	+12,000
Printing and reproduction.....	5,000	5,000	0
Other services.....	1,270,000	1,300,000	+30,000
Project contracts.....	9,220,000	10,900,000	+1,680,000
Payment to "National Institutes of Health management fund".....	4,976,000	5,479,000	+503,000
Supplies and materials.....	2,000,000	2,177,000	+177,000
Equipment.....	515,000	520,000	+5,000
Grants, subsidies, and contributions.....	61,809,000	66,454,000	+4,645,000
Subtotal.....	87,262,000	94,440,000	+7,178,000
Deduct quarters and subsistence charges.....	-18,000	-18,000	0
Total obligations by object.....	87,244,000	94,422,000	+7,178,000

Summary of changes

1967 enacted appropriation.....	\$90,670,000
Comparative transfers within NIH.....	-3,250,000
Transfer to "Operating expenses, Public Building Service," General Services Administration.....	-12,000
Unobligated balance, reserve.....	-164,000
1967 total estimated obligations.....	87,244,000
1968 estimated obligations.....	94,422,000
Total change.....	+7,178,000

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1963

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built in:				
1. Annualization of new positions authorized in 1967				\$59,000
2. Annualization of wage board pay increases				15,000
B. Program:				
1. Research grants		\$49,006,000		3,930,000
2. Fellowships		3,700,000		567,000
3. Training		9,103,000		148,000
4. Laboratory and clinical research	556	8,504,000	11	828,000
5. Collaborative research and development	33	9,909,000	2	1,052,000
6. Biometry, epidemiology, and field studies	80	1,180,000		60,000
7. Review and approval of grants	57	636,000		28,000
8. Program direction	25	230,000		7,000
C. Payments to the "National Institutes of Health management fund" for centrally furnished services:				
Laboratory and clinical research		3,984,000		391,000
Collaborative research and development		45,000		6,000
Biometry, epidemiology, and field studies		109,000		7,000
Review and approval of grants		722,000		95,000
Program direction		116,000		4,000
Total program increases			13	7,123,000
DECREASES				
A. One less day of pay in 1968				-19,000
Total decreases				-19,000
Total net changes requested			+13	+7,178,000

EXPLANATION OF CHANGES

Research grants.—The \$3,930,000 increase will provide \$3,181,000 for approximately 103 additional project grants and \$749,000 for general research support grants.

Fellowships.—The increase of \$567,000 will be used to support 5 research career development awardees (\$264,000); 7 postdoctorals (\$119,000); and 5 specials (\$111,000). An increase for research career awards (\$73,000) covers "cost-of-living" increases inherent in the program.

Training grants.—The increase of \$148,000 will support continuation of the graduate training program and provide for the annual incremental increase experienced yearly in this activity.

Laboratory and clinical research.—The increase of \$828,000 and 11 positions will provide for studies in the field of bacterial and mycotic diseases, and viral, mycoplasma, and rickettsial diseases.

Collaborative research and development.—The increase of \$1,052,000 provides 1 position and \$552,000 for the Vaccine Development Program and 1 position and \$500,000 for the Transplantation Immunology Program.

Biometry, epidemiology, and field studies.—The increase of \$60,000 provides for additional operating costs.

Review and approval of grants.—The increase of \$28,000 provides for increased operating costs.

Program direction.—The \$7,000 increase provides for increased operating costs.

Research grants

	1967 estimate	1968 estimate	Increase or decrease
Regular programs	\$42,780,000	\$45,961,000	+\$3,181,000
Special programs	6,226,000	6,975,000	+749,000
Total, research grants	49,006,000	52,936,000	+3,930,000

INTRODUCTION

In 1967, the Institute plans to support approximately 1,386 regular research projects in the amount of \$42,780,000. The majority of these projects are ongoing noncompeting continuation grants which were approved for payment by advisory groups in 1966 and prior years for project periods of two to seven years. The non-competing continuation grants represent 64% of the total regular research program.

It is planned to support 51 more competing awards in 1968 than are to be funded in 1967. The budget for both years reflects the policies which are in effect for arriving at the Federal and non-Federal share of research projects.

The Institute has developed a well organized mechanism, including its National Advisory Council and other advisory groups, that channel funds into specific areas of research by a system of priorities. These areas are continually redefined, and reviewed by the Institute staff and its advisory groups. The majority of the research grant funds are to be used for the support of ongoing and additional projects in free-ranging research related to the mission of the Institute. The highlights of the 1967 and 1968 program plans are as follows:

PROGRAM PLANS IN 1967 AND 1968

Allergy and other immunologic disorders

Transplantation Immunology.—In 1967, plans are to award approximately \$3,207,000 for the support of research in this field. The Institute funds research projects in seven areas: tissue and cell typing, induction of tolerance in the adult animal, immunosuppression, enhancement, chemistry of transplantation antigens, immune events on the cellular level, and new assay systems of host-graft relationships. Monitoring of changes in the above emphasis areas is being continued by the Institute staff and expert consultants. In 1968 this program will amount to approximately \$3,836,000, an increase of \$629,000 over 1967.

Bacterial and mycotic diseases

Drug Resistant Bacteria.—The widespread use of potent antimicrobial agents has resulted in a new responsibility of major proportion to public health. More and more strains of bacteria are becoming resistant to a greater variety of drugs. The present arsenal of antimicrobial agents will not continue to be adequate even though their judicious use will minimize the development of resistance to some of the antibiotics developed recently. This phenomenon of drug resistance has been dramatically emphasized by the exhibitions of severe outbreaks of meningococcal infection, staphylococcal disease, and the continuing presence of chronic bacterial disease as demonstrated by chronic pyelonephritis and chronic pulmonary disease.

The Institute plans to maintain support for research in this area at approximately \$2,780,000 in 1967 and \$3,250,000 in 1968, an increase of \$470,000.

Leprosy.—Projects on cultivation of the leprosy bacillus, studies on animal transmission, development and evaluation of new anti-leprosy drugs and drug regimes, field trials of chromoprophylactic agents, and immunogenic agents are all considered feasible on the basis of present knowledge of the field.

Tuberculosis.—Emphasis will be placed on research on immunity and hypersensitivity in TB infection, leading to the development of a vaccine which is highly immunogenic but not allergenic. An increase of \$99,000 is requested in 1968 over 1967.

Cholera.—Priority will be placed on programs for the development of an effective cholera vaccine which confers long-term immunity. Research must also be augmented on the treatment of cholera, its bacteriologic features and its pathogenesis, and on chemoprophylaxis of the infection.

Parasitic disease

Malaria.—Despite the immense research effort supported by this Institute and other agencies, several questions remain unresolved. The significant obstacles to widespread chemotherapy of malarial infections brought about by the appearance in recent years of drug-resistant strains of human malaria is a vitally important problem. The Institute plans to award approximately \$589,000 for work in this research area during 1967 and \$677,000 projected for award in 1968, an increase of \$88,000.

Schistosomiasis and filariasis.—Research will be developed on the biology and biochemistry of *Schistosoma japonicum* and its vectors, on comparisons of this species and other species that occur in different geographical regions, especially in relation to pathogenicity; and on immunology, pathology and che-

motherapy and chemoprophylaxis of the disease. Similar efforts will be undertaken in the study of filariasis, especially the mechanism of action and pharmacology of antifilarial drugs. For both diseases, research is needed on the cultivation of the parasites and on the physiology of the vectors.

Viral, mycoplasma, and rickettsial diseases

Chronic and degenerative diseases.—Plans are to project a \$2,200,000 program in the field of chronic and degenerative diseases of microbial origin during 1967. This area includes such dread diseases as chronic renal disease, multiple sclerosis, vascular disease, amyotrophic lateral sclerosis, connective tissue disease and emphysema. The possible infectious and immunologic genesis of these diseases is a research area which, until now, has received little attention from the scientific community. There is a significant body of information available to warrant fruitful participation in a broad-fronted attack on the problems of the infectious and immunologic genesis of the chronic and degenerative diseases in man.

The Institute plans to award approximately \$4,300,000 in 1968, an increase of \$2,000,000 over 1967, which will support and stimulate the growing interest in this field.

In recent years there has been an alarming increase in chronic-progressive respiratory diseases, often resulting in pulmonary emphysema. Additional support in 1966 for emphysema has permitted a definitive effort to explore the role of microbial agents and allergic comprehensive studies in large medical centers in which the various interrelating components can be intensively investigated and evaluated.

Infectious hepatitis.—It is estimated that \$600,000 will be awarded for the study of infectious hepatitis during 1967 with a \$200,000 increase proposed in 1968. The importance of research on this disease is evidenced by the 1964 statistics of 745 deaths with 37,740 new cases reported. These figures are augmented by the long recovery period necessary and possibly permanent debilitating effects of this disease. Research in this area has been plagued by the problem of isolating etiological agents, and the equally great problem of establishing the significance of those agents which have been isolated.

Antiviral substances.—Viral diseases as a single category constitute the largest single cause of morbidity in the United States. In addition, present evidence suggests that many dread diseases of unknown etiology may eventually be shown to be of viral origin.

The great diversity of virus types necessitates the consideration of alternate approaches in combating viral diseases. Except for isolated instances, no generally useful drugs have appeared for the treatment of infections caused by the viruses.

Drug therapy in viral diseases must await the development of a rational approach to the synthesis of chemotherapeutic agents. This approach can be fostered by fundamental studies of the virus-cell interaction and through basic studies of the way in which viruses grow and replicate. Equipped with this basic virological knowledge, investigators may then devise means of disrupting the virus growth for therapeutic purposes.

In recent years, the increasing knowledge of the structure and metabolism of nucleic acid and protein synthesis has produced a large resource base of interest and an opportunity for focus on antiviral activity in molecular biology. In this area it is planned to support projects amounting to approximately \$5,500,000 in 1967, and \$4,250,000 in 1968, an increase of \$750,000.

Arboviruses.—Research will be concentrated upon two major areas: the arthropod-borne viruses (Japanese encephalitis, dengue viruses, Chikungunya, etc.) and the respiratory viruses, especially the influenza viruses. Research will be directed at strain differences, reservoir-host and reservoir-vector relationships, the immunologic studies leading to vaccine development, the effect of viral infection upon the central nervous system, etc. An increase of \$86,000 is requested in 1968 over 1967.

The increased research activities mentioned above on leprosy, tuberculosis, cholera, schistosomiasis, filariasis and arboviruses are in support of diseases of interest to the U.S.-Japan Cooperative Medical Science Program.

Special programs

The increase of \$749,000 requested for general research support grants represents the Institute's proportionate share of the proposed National Institutes of Health increase in this area.

1966 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Distribution of research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Num- ber	Amount	Num- ber	Amount	Num- ber	Amount
1. Noncompeting projects.....	975	\$27,404,000	1,027	\$28,762,000	+52	+\$1,358,000
2. Competing projects.....	405	14,376,000	456	16,199,000	+51	+1,823,000
3. Supplementals.....	(90)	1,000,000	(90)	1,000,000	0	0
4. Subtotal regular program.....	1,380	42,780,000	1,483	45,961,000	+103	+3,181,000
5. General research support.....		4,576,000		5,325,000		+749,000
6. Scientific evaluation.....		50,000		50,000		0
7. Gorgas Memorial Laboratory.....		500,000		500,000		0
8. Categorical clinical research centers.....	6	1,100,000	6	1,100,000	0	0
9. Total research grants.....	1,386	49,006,000	1,489	52,936,000	+103	+3,930,000

Research grants program analysis

Fields	1967 estimate	1968 estimate	Increase or decrease
Allergy and other immunologic disorders.....	\$6,845,000	\$7,374,000	+\$529,000
Transplantation immunology ¹	(3,207,000)	(3,836,000)	(+629,000)
Bacterial and mycotic diseases.....	13,690,000	14,688,000	+998,000
Drug resistant bacteria.....	(2,780,000)	(3,250,000)	(+470,000)
Tuberculosis.....	(660,000)	(759,000)	(+99,000)
Parasitic diseases.....	5,133,000	5,515,000	+382,000
Malaria.....	(589,000)	(677,000)	(+88,000)
Viral, mycoplasma, and rickettsial diseases.....	17,112,000	18,384,000	+1,272,000
Chronic and degenerative diseases.....	(2,200,000)	(4,300,000)	(+2,100,000)
Infectious hepatitis.....	(600,000)	(800,000)	(+200,000)
Antiviral substances.....	(3,500,000)	(4,250,000)	(+750,000)
Arboviruses.....	(571,000)	(657,000)	(+86,000)
Subtotal regular program.....	42,780,000	45,961,000	+3,181,000
General research support grants.....	4,576,000	5,325,000	+749,000
Scientific evaluation.....	50,000	50,000	0
Gorgas Memorial Laboratory.....	500,000	500,000	0
Categorical clinical research centers.....	1,100,000	1,100,000	0
Total research grants.....	49,006,000	52,936,000	+3,930,000

¹ Excludes \$600,000 in categorical clinical research centers for 1967 and 1968.

NOTE.—Re "Increase or decrease" column—Nonadd items in the fields of allergy and other immunologic disorders and viral, mycoplasma, and rickettsial diseases show a greater amount than net program items due to reprogramming within the fields.

Fellowships

	1967 estimate	1968 estimate	Increase or decrease
Total fellowships.....	\$3,700,000	\$4,267,000	+\$567,000

Program plans in 1967 and 1968

The primary objective of the Fellowship Program is to increase the availability of trained professional researchers in allergy and infectious diseases.

The increase of \$567,000 in 1968 will be used to support five additional Research Career Development Awardees, seven Postdoctorals, five Specials, and to cover the "cost-of-living" increases which are inherent factors of the ongoing Career Award Program.

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1967

Distribution of fellowships

	1967 estimate		1968 estimate		Increase or decrease	
	Num-ber	Amount	Num-ber	Amount	Num-ber	Amount
1. Continuations:						
(a) Noncompeting.....	161	\$2,647,000	169	\$3,039,000	+8	+\$392,000
(b) Competing.....	45	568,000	44	608,000	-1	+40,000
2. Supplementals.....	(7)	9,000	(7)	9,000	0	0
3. New.....	55	476,000	65	611,000	+10	+135,000
4. Total fellowships.....	261	3,700,000	278	4,267,000	+17	+567,000

Fellowships (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Num-ber	Amount	Num-ber	Amount	Num-ber	Amount
1. Postdoctoral.....	103	\$706,000	110	\$825,000	+7	+\$119,000
2. Special.....	30	285,000	35	396,000	+5	+111,000
3. Research career:						
(a) Career.....	27	747,000	27	820,000	0	+73,000
(b) Development awards.....	101	1,962,000	106	2,226,000	+5	+264,000
4. Total fellowships.....	261	3,700,000	278	4,267,000	+17	+567,000

Training grants

	1967 estimate	1968 estimate	Increase or decrease
Total training grants.....	\$9,103,000	\$9,251,000	+\$148,000

The Graduate Training Grant Program provides the means to build more effectively for the future by supporting the research training of young scientists, particularly in neglected and rapidly expanding areas of prime concern. In some areas, such as immunology, virology and tropical medicine, notable progress is heavily dependent upon development of newly trained personnel. Program plans in 1967 and 1968 call for the continuation of training in the categorical areas of allergy, immunology, including transplantation immunology, infectious diseases, tropical medicine, parasitology and allied fields.

Distribution of training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Num-ber	Amount	Num-ber	Amount	Num-ber	Amount
1. Continuations:						
(a) Noncompeting.....	148	\$7,350,000	140	\$7,560,000	-8	+\$210,000
(b) Competing.....	21	1,296,000	21	1,361,000	0	+65,000
2. Supplementals.....	(5)	95,000	(5)	95,000	0	0
3. New.....	6	312,000	3	185,000	-3	-127,000
4. Scientific evaluation.....	(1)	50,000	(1)	50,000	0	0
5. Total training grants.....	175	9,103,000	164	9,251,000	-11	+148,000

1968 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Training grants (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Graduate.....	175	\$9,053,000	164	\$9,201,000	-11	+\$148,000
2. Scientific evaluation.....	(1)	50,000	(1)	50,000	0	0
3. Total training grants.....	175	9,103,000	164	9,251,000	-11	+148,000

Training grants program analysis

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Allergy and other immunologic disorders	47	\$2,444,000	44	\$2,484,000	-3	+\$40,000
Bacterial and mycotic diseases.....	46	2,354,000	43	2,442,000	-3	+88,000
Parasitic diseases.....	25	1,267,000	23	1,288,000	-2	+21,000
Viral, mycoplasma, and rickettsial diseases	57	2,988,000	54	2,987,000	-3	-1,000
Scientific evaluation.....	(1)	50,000	(1)	50,000	0	0
Total training grants.....	175	9,103,000	164	9,251,000	-11	+148,000

Laboratory and clinical research

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	556	\$5,184,000	567	\$5,264,000	+11	+\$80,000
Other expenses.....		7,304,000		8,482,000		+1,178,000
Total.....	556	12,488,000	567	13,746,000	+11	+1,258,000

INTRODUCTION

The objectives of the intramural research program are the discovery and exploitation of new knowledge towards the goal of better prevention or treatment of those diseases of man caused by infectious agents or which result from abnormal immunological reactions. The scope of the program is broad, embracing both basic and applied research on all aspects of a wide variety of diseases of infectious etiology including those caused by viruses, rickettsia, bacteria, yeasts, molds, fungi, protozoa and helminths; on various allergic and immune reactions to these agents and other antigens, and on such related problems as emphysema and the mechanisms of rejection of tissue transplants. Epidemiological, clinical, and laboratory approaches to these problems are constantly being modified by the new knowledge and technics deriving from the broad-based research programs in the medical and related sciences in this country and abroad. New viruses are still being discovered at frequent intervals. The role of these and other newly discovered causes of human diseases such as mycoplasma is being better defined and extended, new diagnostic methods evolved, and new technics of vaccination developed. The large number of still unsolved problems provide ample evidence of the need for a more vigorous multidisciplinary research effort which seeks still undiscovered ways for earlier translation of the benefits of this expanding knowledge to the public benefit.

One of the properties of viruses and related obligatory intracellular infectious agents (such as rickettsiae) which has become increasingly clear during the past few years is that of persistence. New technics, developed in large part in the Laboratory of Infectious Diseases, have shown that the infectious nucleic acid core of many viruses can persist in a state in which infectious virus par-

ticles are not produced for many generations of cell multiplication and replacement. These "latent" infections may be changed into "active" processes by many factors including climatological, biochemical, endocrinological changes, introduction of other infectious agents, and other natural or induced changes in the immunological status of the host. Herpes simplex or "cold sores" is the most common human example but the relations between chicken pox in childhood and herpes zoster or "shingles" 40 to 50 years later, or activation of cytomegalic virus during cancer chemotherapy or immunosuppression for cancer or organ transplant are other examples of what is becoming an increasing problem in medicine. Still more recently, the demonstration that several sarcoma viruses of animals exist in an undetectable state in the tumor but can be converted into infectious sarcoma virus by adding the animal leukemia virus has shown how "helper" viruses can be used to detect these inapparent infections of cells and are opening up new pathways for understanding how viruses or other intracellular parasites may cause a variety of chronic or degenerative diseases.

Still further advances in laboratory technology are needed before the etiologic agents of a number of common human diseases such as hepatitis and epidemic virus diarrheas can be isolated, identified, and used in vaccine development. New antiviral agents need to be identified and characterized as to their possible usefulness in prevention or treatment of a wide spectrum of viral diseases since vaccination can be only a partial public health answer to the hundreds of viruses capable of causing human infection.

The Institute continues to maintain field stations in Honolulu, Hawaii; Hamilton, Montana; Atlanta, Georgia; and the Panama Canal Zone, which enable it to take advantage of the geographic differences in prevalence of certain diseases, to work more safely with these diseases in their natural ecological habitats and in animal populations which cannot be accommodated at Bethesda, and to take advantage of certain human volunteer populations for the study of malaria. To these has been added the scientific responsibility for research in cholera under the State Department Agency for International Development (AID) Department of Health, Education, and Welfare agreement for the SEATO Cholera Research Program. This includes scientific responsibility for the SEATO-Pakistan Cholera Research Laboratory in Dacca, East Pakistan, where studies on the use of improved vaccines and new treatments for this scourge of the old world are being conducted. Exciting advances in the United States being coordinated under NIAID grant support by the U.S.-Japan Cooperative Medical Science Program with the SEATO Program are those related to isolation of the cholera toxin which causes the fatal diarrhea and the development of vaccines for neutralizing this toxin. The SEATO-Cholera Research Program, using AID funding, is developing the toxins and vaccines for use in these studies both in the United States and in Pakistan and will plan the translation of any apparent beneficial result to man whenever appropriate. Enlargement of the laboratory staff in East Pakistan with heavier demands for administrative and logistic support by the NIH plus the increased responsibilities involved in coordination of the U.S.-Japan Cooperative Medical Science Program in Cholera Research with the SEATO-Cholera Research Program will necessitate an increase in the number of NIAID personnel involved in these activities from five to a total of eight. It is hoped this can be achieved within existing resources in 1967 and 1968.

PROGRAM PLANS IN 1967 AND 1968

Allergy and other Immunologic Disorders

Allergic reactions now affect at least 20,000,000 Americans. Undesirable immunologic reactions block successful tissue transplantation, and chronic infections such as chronic bronchitis and pyelonephritis may have underlying immunologic disorders. These problems deserve a first-rate effort towards solution which is not readily achieved in grant supported research because of the necessity for long continued effort with a high possibility of failure.

The resignation of the former Clinical Director early in 1967 necessitated the recruitment of a new Clinical Director. Taking into consideration the unique facilities provided by the Clinical Center and the paucity in academic institutions of trained and active clinical investigators in the fields of allergy, clinical immunology and chronic infections, the decision was made to redirect the Laboratory of Clinical Investigations effort towards research in these problems by the recruitment of the new Clinical Director.

Chronic bronchitis and emphysema in particular will be a focus of effort because of the magnitude of the problem (in 1964 these were a primary cause of

mortality in 20,000 deaths and a contributing factor in 41,000 others). This research program will be directed towards the discovery and elimination of causative factors, early detection and therapy, and rehabilitation.

This program will be achieved by reorientation in 1968 and when fully activated in succeeding years should provide a growing manpower pool for research on these difficult areas as clinical associates are trained and added to both the academic and governmental scientific community.

Bacterial and mycotic diseases

An increase of 1 position and \$25,000 is requested for research on bacterial genetics directed toward discovering the evolutionary processes of the ever-increasing number of drug-resistant strains of bacteria. These strains render formerly effective antibiotics ineffective. Drug-resistant strain of staphylococcus threaten the success of many surgical procedures and is the scourge of many hospitals where they sometimes spread from patient to patient through routine hospital procedures. Tuberculosis is again emerging as a serious health problem due to the appearance of drug-resistant strains. The incidence of some bacterial diseases such as chronic pyelonephritis has not yielded to antibiotics. The Institute hopes to accumulate much basic information on how bacteria acquire drug resistance. Work on bacterial genetics has been pursued for many years but has been confined to only a few types of bacteria. The requested increase will enable the work to be expanded to other bacterial species.

Still another specific area of increased research activity during this period will be in the further development of a killed tuberculosis vaccine. Previous work has demonstrated that an extract of mechanically disrupted BCG cell walls in a mineral oil vehicle is capable of protecting mice from pulmonary challenge with virulent tubercle bacilli to a greater degree than living BCG vaccine. Further refinements and standardization have made possible the initiation of safety and protection tests in primates in cooperation with the National Primate Center at the University of California. Early results, while providing evidence of some protection, also revealed a number of problems that require solution before any real progress toward a vaccine for human use can be contemplated. Intensive efforts toward solution of these problems will require greater purification of the antigen, testing in large numbers of animals other than mice, and a more intensive bacteriological and pathological study of the test animals. Because of the importance of this effort to the U.S.-Japan Cooperative Medical Science Program on tuberculosis, some shifting of personnel and funds were accomplished in 1967 to enable extension of the work and there will probably be additional shifting of funds in 1968 to maintain the momentum.

Parasitic diseases

The Institute will continue to explore the pathology of malaria in man and monkeys. Recent studies in the immunological and pathological aspects of malaria have confirmed that the host response to the presence of this parasite is extraordinarily complex. The nature of the immune response in malaria is so complicated by the involved life cycle of the parasite as to render the term immunity inappropriate in the usual sense. Simian models are now available in the laboratory to explore these basic and primary aspects of the host-parasite relationship. The availability of human volunteers in the long continued studies on chemoprophylaxis and chemotherapy for the more sophisticated aspects of the studies make the opportunities not only unique but imperative to pursue.

Research on filariasis and schistosomiasis will receive greater emphasis in the parasitic disease program in response to the demand of the U.S.-Japan Cooperative Medical Science Program. Filariasis research is concerned with the improvement of serologic tests for diagnostic purposes and with studies on the host-parasite relationship directed toward developing effective drugs for therapeutic and prophylactic use. Improved diagnostic tests and treatment techniques are also the major goals in the research on schistosomiasis. Studies in these areas will be intensified to discover effective preventive measures.

Viral, mycoplasma, and rickettsial diseases

An increase of 5 positions and \$150,000 is requested to embark on the investigation of viruses as a cause of some slowly progressing chronic diseases of presently unknown etiology of the nervous system, blood vessels, muscles, lungs, and kidneys of man. Some recent discoveries in one type of human neurological disease have pointed out the need for this important research. Investigators have conclusively shown that certain slowly developing fatal diseases of animals are

caused by filterable agents. These diseases are characterized by unusual proliferative and degenerative processes which have a striking resemblance to disease processes occurring in etiologically obscure chronic diseases of man. Because mink, sheep, and goats are known to be susceptible to these animal viruses causing chronic diseases having similarities to some human diseases, the Institute proposes that they be tried as experimental hosts for the isolation of viruses from persons affected with certain chronic disease, utilizing the expanded animal facilities developed at Rocky Mountain Laboratory during 1967. Since long periods of observation are necessary in studying diseases of this kind, incubation periods taking up to 2 years, it is necessary that a large number of animals be inoculated as soon as possible if any kind of definitive results are to be expected within 5 years. The animal work will be accompanied by intensified efforts to develop technics for isolation of these viruses in tissue cultures and to develop other diagnostic methodology.

An increase of 1 position and \$55,000 is requested to bolster the research programs in hepatitis. Acute hepatitis is a major unsolved disease problem in the nation. The true incidence far exceeds the 50,000 cases reported each year because many cases escape recognition. Although a relatively mild disease in children, hepatitis in adults is serious and a high percentage of cases require more than a month of hospitalization followed by months of restricted activity. Research on this disease has been stymied because the infectious agents, believed to be a virus, has not been isolated. The requested increase would permit the Institute to develop and investigate several new technics which may make isolation of the hepatitis virus possible. Once this is done, the research logjam will break permitting possible vaccine development, early detection, and effective treatment of this disease.

An increase of 2 positions and \$50,000 is requested to expand the work on antiviral substances, specifically to purify and identify the molecular structure of interferon. Interferon is a biological substance which is produced by cells a short time after they have been exposed to or infected by a virus and is probably involved in the primary mechanisms by which a host limits and cures virus infection. The progress which has been made in the war on viral diseases is limited to control of certain ones (e.g. poliomyelitis and smallpox) by vaccines. However, the great diversity of virus types (over 500 are known to infect man) dictates that the basic nature of virus infection and the body's reaction to it must be explored in order to find ways to effectively treat infections caused by viruses. Interferon is a promising lead in this exploration.

An increase of 2 positions and \$150,000 is requested for the relocated and expanded long-term animal holding facility of the Laboratory of Infectious Diseases. This facility, located at the National Institutes of Health Animal Center, Poolesville, Maryland, was developed for long-term animal isolation and care in connection with studies on the oncogenic (tumor producing) properties of viruses. These studies are part of a program to define the cancer inducing properties of a large number of viruses which commonly infect man or animals in order to determine the viruses' importance as a possible cause of certain types of human cancer. Knowledge thus gained would be used to prevent the spread of potential oncogenic viruses through virus vaccines, a possibility that is a particular problem with adenoviruses and that presently hampers the further development of some very promising virus vaccines. The renovated facility will allow a marked increase in the number of animals which can be put to test and will permit an increase in the number of viruses with oncogenic properties under study. This increase will also allow the expansion of studies on the ability of these viruses to cause other late or obscure adverse effects on the host as these effects may relate to human chronic and degenerative diseases. The increases will provide adequate animal care and monitoring for the animals now under study. It will also permit procurement and maintenance of additional animals.

An increase of \$398,000 is requested for the planned updating of laboratories in a program which will extend over several years. Most of the laboratory spaces occupied by the Institute were constructed 20 to 25 years ago and built-in laboratory benches, hoods, ventilation and exhaust systems, and even items of equipment are original in many areas.

Also included in this net increase is \$39,000 for mandatory items such as annualization of positions new in 1967, and annualization of wage board pay increases in 1967, offset by one less day of pay in 1968. There are also increases of \$391,000 for centrally furnished services from the "National Institutes of Health management fund".

Collaborative research and development

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	33	\$346,000	35	\$362,000	+2	+16,000
Other expenses.....		9,608,000		10,663,000		+1,055,000
Total.....	33	9,954,000	35	11,025,000	+2	+1,071,000

INTRODUCTION

The Collaborative Research and Development Program has as its mission the translation of significant basic research data into practical achievements of clinical applicability in allergy and infectious diseases. These activities are carried out primarily through research contracts with industry, universities, and other Federal and non-Federal institutions. In the planning and evaluation of contract-supported work the Institute is advised by committees comprised of leading scientists in the fields concerned. Each contract is monitored by a Scientist Project Officer, usually an NIH intramural research investigator, who reviews the scientific progress of the work and aids the contractors with special technical problems. In addition, an Administrative Project Officer is assigned to each contract to handle the non-scientific aspects of the project. The research areas encompassed by the Collaborative Research and Development Program are: (1) Transplantation and Immunology; (2) Virus Vaccine Development; and (3) Research Reference Reagents.

PROGRAM PLANS IN 1967 AND 1968

Allergy and other immunologic disorders

The overall mission of the *Transplantation and Immunology Program* is to achieve long-term success in human transplantation by intensive studies designed to develop successful histocompatibility typing methods, immunosuppressive therapy, and methods of organ preservation. An important primary goal is to determine the extent to which success in transplantation depends on histocompatibility (or tissue) typing. Tissue typing, if clearly correlated with graft acceptance, would then provide a sound scientific basis for organ transplantation. The first program goal was to produce certain reagents necessary before such a problem could be solved. During 1967, this goal was met and sufficient volumes of anti-leucocyte antisera for use in the matching of graft donors and recipients were produced. By the use of these reagents, rapid progress has been made in the determination of the total number of human transplantation antigens and it has been found that there are six or seven major tissue types rather than the twenty or so previously estimated. Recent studies by the Institute contractors show that with high quality reagents used by competent scientists, the relation between good histocompatibility typing and graft acceptance is excellent. Conversely, mis-matching and graft rejection are closely correlated. During 1967, intensive efforts are being made also to improve the technical aspects of tissue typing and the knowledge gained from these studies accounts for some of the recent successes in human transplantation.

During 1968 the program will be directed more toward evaluation of tissue typing in transplantation patients and less toward reagent production. The reagents already produced by the program will be used to solve the primary question of the value of histocompatibility typing. In the past, most of the poor results of typing could be blamed on either poor reagents or lack of technical competence in performance of typing tests. Further efforts to improve and standardize the quality of the program's reagents will be made. In addition, the Transplantation and Immunology Program will conduct courses for 10-12 scientists per course in modern techniques of histocompatibility typing. These courses will be taught by selected members of our advisory committee and contractors. Courses of this type are essential if scientific competence in this field is to be increased in the United States.

There is a need to conduct tissue typing evaluation studies where the typing of recipient and donor can be done prior to transplantation. It is now thought

by most scientists that transplantation is feasible with typed cadaver organs. Due to the large number of recipients that much be typed to match a single donor, studies of this type can currently be done only in large metropolitan areas. The Transplantation and Immunology Program in the transplantation evaluation centers will be closely correlated and integrated with existing dialysis and surgical programs. During 1968, several transplantation evaluation studies will be initiated in the United States.

Some of the funds requested for 1968 will also be used to support studies on the preservation of organs, particularly the kidney. Although certain tissues can now be preserved by freezing (corneas, heart valves, tissue cultures, etc.,) freezing whole organs has not been successful and preservation by other techniques have so far been limited to a few hours. One of the greatest obstacles to a fully effective transplantation program is the availability of viable and functional organs. A system for preserving such organs for several days would allow sufficient time for typing, matching and transportation to a recipient anywhere in the country.

Further studies are planned to relate the degree of success in tissue typing to various problems in clinical management, particularly in relation to dosage levels of immunosuppressive drugs needed when donors and recipients show various degrees of histocompatibility matching.

An increase of 1 position and \$500,000 is requested in 1968 over 1967.

Viral, Mycoplasma, and Rickettsial Diseases

During 1967, the *Vaccine Development Program* is continuing its efforts in two major areas: (1) the development and testing of experimental rubella (German measles) vaccines; and (2) the further development of vaccines against a mycoplasma and several viruses which are known to cause severe respiratory illness. Certain high-risk population groups including infants, children, and the aged are particularly affected by these respiratory agents.

The rubella virus is recognized as an important cause of congenital defects, including mental retardation in children born to mothers contracting German measles in early pregnancy. Every effort is being directed toward the development of a safe and effective vaccine to prevent the occurrence of German measles. An attenuated strain of rubella virus has been developed by investigators at the Division of Biologics Standards. Work on this strain and other strains suitable for vaccine purposes will be expanded. The program is supporting thirteen contracts for research, development, and testing of prototype rubella vaccines. It will be necessary to test a number of different strains in order to select that strain which best meets all the criteria for a safe and effective vaccine. These criteria include the following requirements: inability to induce clinical illness and viremia; non-transmissibility of the vaccine virus from vaccine to close contacts; lack of any appreciable shedding of vaccine virus from the pharynx; induction of high levels of serum antibody in recipients, and a lifelong immunity to the natural disease; and ability of the vaccine strain to grow to high titer in a cell culture system acceptable for administration eventually to millions of children. The program has developed and standardized diagnostic reagents and methodology necessary for the laboratory evaluation of vaccines. Work on an inactivated vaccine will be continued, particularly because of the need for a preparation of this type in women of the child-bearing age.

In 1967, respiratory virus vaccine development in continuing at a high level of productivity. Institute scientists, collaborating with the pharmaceutical industry and with Army and Navy scientists, have developed a vaccine that is protective against adenovirus type 4 infection, the most important cause of respiratory disease in the military. Field trials in 50,000 recruits have been eminently successful. The vaccine is at least 95% effective and there have been no untoward effects. In order to satisfy a national defense need, 750,000 tablets of the vaccine have been made available this year to the military. An experimental vaccine for the important group of pneumonias caused by a pleuro-pneumonia-like organism has been developed and has been shown to be moderately effective. Several improved mycoplasma vaccines are now being produced and clinical trials will be initiated shortly. Experimental respiratory syncytial and parainfluenza vaccines have been developed and have under-gone clinical trials in young children, the group most susceptible to the severe illnesses produced by natural infection. Results have shown the parainfluenza vaccines to be effective. A trivalent parainfluenza vaccine (combining types 1, 2, and 3) has been produced, and combinations made with still other vaccines. The potential of certain res-

piratory viruses to cause tumor formation in experimental animals continues to require an intensive effort to prevent the use of oncogenically contaminated virus strains.

In 1968, there will be increased procurement and testing of experimental lots of vaccines for clinical trials. Work on the preparation of vaccines for the rhinoviruses which are the main causative agent of the common cold will be increased.

An increase of 1 position and \$552,000 is requested in 1968 over 1967.

In 1967, the *Reference Reagents Program* has emphasized (1) completion of reference reagents production for those accepted viral prototypes of the adeno, myxo, entero, and herpes virus groups; (2) continued production, testing and certification of both type specific and grouping reagents for arboviruses; (3) continuation of the production, testing and certification of human and animal mycoplasma reagents in a cooperative effort with Division of Biologics Standards; (4) planning and initiating rhinovirus reagent production, testing and certification; and (5) pilot studies on the methodology for improved ampuling, packaging, and storing of labile reference reagents.

In 1968, primary emphasis will be on (1) facilitating and expediting production of vitally needed rhinovirus and arbovirus reference reagents; (2) conducting an intensive research and development program on lyophilization and storage of reference reagents; (3) re-examining research reference reagents produced under previous contracts now in the repository to determine viability, titers, etc., and presence of contaminants now detectable by methods not previously available; and planning and initiating production of replacement reagents where indicated; (4) studying and developing improved methodology in the production of anti-serum, concentrating on such factors as the type and quality of animals used, the nature of antigens and adjuvants, immunization schedules and routes of injection; and (5) planning, developing, and initiating production of reagents to those additional organisms causing infections and parasitic disease, in response to needs for other standardized microbial reagents not commercially available.

Included in this net increase is \$13,000 for annualization of positions new in 1967 offset by one less day of pay in 1968. There is also an increase of \$6,000 for services furnished centrally by the National Institutes of Health management fund.

Biometry, epidemiology, and field studies

	1967 estimate		1968 estimate		Increase or decrease	
	Posi-tions	Amount	Posi-tions	Amount	Posi-tions	Amount
Personnel compensation and benefits.....	80	\$603,000	80	\$603,000	0	0
Other expenses.....		686,000		753,000		+\$67,000
Total.....	80	1,289,000	80	1,356,000	0	+\$67,000

Biometry, Epidemiology, and Field Studies are primarily related to insect transmitted virus diseases as represented by the Middle America Research Unit in the Panama Canal Zone, and the arbovirus research program at the Rocky Mountain Laboratory. These activities have also been identified as important ingredients in the U.S. element of the U.S.-Japan Cooperative Medical Science Program of arbovirus research and provide support in the form of project officers to the Reference Reagents Program of the Institute. Other epidemiology and field studies relate to respiratory diseases in an institutional population where new causative agents are being sought and to studies on certain fungus and leptospiral infections in Panama.

Of the net increase, \$60,000 is requested to take care of the increased costs of maintaining current levels of support for operating costs and \$7,000 for centrally furnished services from the National Institutes of Health management fund.

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 1975

Review and approval of grants

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits	57	\$565,000	57	\$565,000	0	0
Other expenses		793,000		917,000		+\$124,000
Total	57	1,358,000	57	1,482,000	0	+124,000

This activity provides for the over-all coordination and administration of the Institute's grants programs. The activity is responsible for planning and developing scientific programs for research and training grants and fellowship awards. This involves the collection, processing, review and evaluation of applications; support of the National Advisory Allergy and Infectious Disease Council; liaison with appropriate organizations and scientists; continual vigilance by professional staff of program progress on scientific activities; and surveillance by supporting personnel on recording and reporting of varied information concerning grants management.

The requested program increase of \$28,000 will provide for increased operating costs. Included in the net increase requested is \$1,000 for annualization of a position new in 1967, offset by one less day of pay in 1968. There is also an increase of \$95,000 for centrally furnished services from the National Institutes of Health management fund.

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits	25	\$241,000	25	\$241,000	0	0
Other expenses		105,000		118,000		+\$13,000
Total	25	346,000	25	359,000	0	+13,000

This activity supports the Institute Director and his immediate staff in the over-all administration, coordination and direction of all the Institute's activities.

The requested program increase of \$7,000 will provide for increased operating costs. Included in this net increase is \$2,000 for annualization of a position new in 1967, offset by one less day of pay in 1968. There is also an increase of \$4,000 for centrally furnished services from the National Institutes of Health management fund.

New positions requested, fiscal year 1968

	Grade	Annual salary
Laboratory and clinical research:		
Medical officer	GS-13	\$15,561
Do	GS-12	13,201
Chemist	GS-11	9,536
Do	GS-7	7,729
Biological laboratory technician (3)	GS-7	19,353
Do	GS-5	15,993
Surgeon	Full	9,644
Total (11)		91,017
Collaborative research and development:		
Medical officer	GS-13	15,561
Secretary	GS-5	5,331
Total (2)		20,892
Total new positions, all activities (13)		111,909

Mr. Chairman and members of the committee, one has only to compare today's newspaper and magazine articles about public health with those of 50 years ago to know that medical science has made progress against infectious diseases.

Senator HILL. We sure have. If we had made as much progress in other fields as we have in this one, we would be much further ahead, wouldn't we?

VACCINES, ANTIBIOTICS, AND TREATMENTS

Mr. DAVIS. Yes, sir. Vaccines, the products of research, have practically wiped out such former scourges as diphtheria, whooping cough, tetanus, and poliomyelitis. And thanks to antibiotics, advances have also been made in the treatment of such diseases as tuberculosis, venereal disease, and bacterial pneumonia.

Senator HILL. Why don't you get one for typhoid fever? I had it once.

Dr. DAVIS. That is a rare disease in this country.

Senator HILL. Off the record.

Back on the record.

Dr. DAVIS. Medical research has paid off in the field of infectious diseases.

CONTINUING HEALTH PROBLEM

Despite these advances, infectious diseases and related allergic and immunologic disorders are still one of the Nation's major public health problems. As a group, these conditions rank third as a cause of death, accounting for some 110,000 deaths a year. This number includes 10,000 children who die of respiratory infections in their first year of life. When one remembers that each of these infant deaths represents a lost lifetime, the real loss amounts to more than 700,000 man-years of life annually.

But the toll does not stop there. The American people suffer more than a quarter of a billion episodes of acute infectious disease every year. And 17 million Americans suffer from allergies. The annual cost is staggering: 850 million days of restricted activity, 110 million lost workdays, 160 million lost schooldays, \$1.5 billion in lost productivity, and upward of \$1 billion spent for medical treatment.

The programs of research and research training conducted and supported by the Institute are designed to relieve the American people of this enormous medical and economic burden.

MICROBIOLOGY AND IMMUNOLOGY RESEARCH

The Institute's program, however, has a broader significance than is indicated by mere statistics. Research in microbiology and immunology nourishes the entire field of biomedicine and has an impact on the research programs of other Institutes. Here are just two cases in point, one from the field of virology, the other from immunology.

POSSIBLE VIRUS CAUSE OF CANCER AND DEGENERATIVE NEUROLOGICAL DISORDERS

First, animal studies continue to yield evidence that viruses may also be a cause of cancer and of such chronic conditions as degenerative neurological disorders. The intensive study of viruses may hold the key to the eventual conquest of these diseases.

ORGAN TRANSPLANTATIONS

Second, the major barrier to successful kidney and other organ transplantation is presently a problem in immunology; namely, rejection of the transplanted organ due to the body's defensive immune response, which is triggered by any intruder, whether it is a lifesaving transplant or a life-threatening microbe.

Research in immunology holds the key to overcoming that barrier. It may also lead to ways of preventing some kinds of kidney disease, such as chronic glomerulonephritis.

MAN-AFFLICTING AGENTS

The allergic and infectious diseases pose a great challenge to medical research scientists. Not only does the field encompass several hundred distinct diseases, but there are several thousand different agents—viruses, bacteria, fungi, parasites, rickettsiae, and allergenic substances—that can afflict man. All these diseases and agents must be studied. Knowledge of their characteristics makes possible improved prevention and diagnosis, and contributes meaningfully to the general progress of man's understanding of life processes.

RESEARCH PROGRAM PRIORITIES

As was pointed out in a special report prepared recently for the President, due to practical limitations on resources, the Institute has established priorities in its research program, apart from the necessity to support a broad program of general research and research training. In the selection of priority areas, account is taken of three factors: the public health impact of the disease problem, the state of knowledge in the particular scientific field, and available manpower and facilities.

DISEASE ATTACK STRATEGY

The Institute's present strategy includes three forms of attack on disease.

The first, which spearheads the Institute attack, is the broad program of scientist-originated fundamental research being supported at medical centers throughout the Nation and conducted at the Institute's own outstanding intramural laboratories in Bethesda, Md., Hamilton, Mont.; Atlanta, Ga.; and the Panama Canal Zone.

The second comprises uncontrolled, but planned, grant-supported or intramural special-emphasis programs, which are aimed at uncovering new knowledge about selected disease problems.

And the third consists of collaborative, goal-oriented, centrally managed, contract-financed nationally organized research and development programs, which are designed to translate new knowledge into products and techniques of immediate benefit to human beings.

COOPERATIVE PROGRAMS

The Institute is presently conducting four nationally organized programs in partnership with industry, university research centers, and other Institutes of the NIH.

RESPIRATORY VIRUS VACCINE DEVELOPMENT PROGRAM

The respiratory virus vaccine development program is developing and evaluating vaccines against acute viral respiratory infections, the cause of more than half of all illness in the United States.

TRANSPLANTATION IMMUNOLOGY PROGRAM

The transplantation immunology program is developing materials and methods for overcoming the immunologic barrier to successful organ transplantation.

RUBELLA (GERMAN MEASLES) VACCINE DEVELOPMENT PROGRAM

The rubella, or German measles, vaccine development program is developing and evaluating vaccines against a virus that kills and cripples unborn children.

Senator HILL. Do you think we will have that vaccine soon?

Dr. DAVIS. We anticipate having it before the next epidemic, which we expect in 3 or 4 years.

Senator HILL. I didn't think it would be that far off. The epidemic might be that far off. I am talking about the vaccine.

Dr. DAVIS. We think it will take almost that long, because of the necessity for testing it, evaluating it, insuring that it is safe, and that it is effective. Senator Hill, we have a special report on the Rubella vaccine.

Senator HILL. Will you file that with us?

Dr. DAVIS. Yes.

(The information follows.)

RESPIRATORY VACCINE DEVELOPMENT

THE ACUTE RESPIRATORY DISEASES

Every year 250 million *reported* acute respiratory ailments plague the people of this country. This figure grossly understates the actual incidence of these diseases, since Americans annually suffer an estimated 500 million colds. Acute respiratory ailments account for about half of all illness in the Nation and include everything from mild colds to incapacitating febrile illnesses and pneumonia.

The death toll from acute respiratory diseases is high. It averages about 70,000 annually and accounts for about 70 percent of the deaths from all infectious diseases in the country. About 10,000 infants die each year from these diseases. Days lost from work and reduced productivity due to acute respiratory diseases cost industry \$3 billion a year. The added cost of medical treatment (more than \$1 billion), the time required of physicians to care for patients (12 million hours), and the school days lost by children (108 million) underscore the enormity of the problem.

APPROACHES TO SOLVING THE PROBLEM

An infectious disease can be attacked by eliminating the responsible organism or its carrier, thus preventing its spread: by immunizing the population with vaccines; or by treating the disease with effective drugs after it has developed.

Every human at one time or another is invaded by the organisms that cause acute respiratory infections, is host to them while they multiply, and passes them on to his fellow man. There is no known intermediate animal host and the organisms are so prevalent that this chain of contact-reproduction-spread can be broken only by preventing the disease.

While antiviral substances—that is, chemicals for treating viral diseases as antibiotics and sulfas are used against bacterial diseases—would be ideal, these drugs are still in early stages of research.

Vaccines to prevent the development of viral (and some non-viral) respiratory diseases are presently the most promising means for their control.

Although a large number of viruses (up to 150) can cause acute respiratory diseases, a relative few account for a high proportion of the total illness. The respiratory syncytial virus and parainfluenza viruses 1, 2 and 3 cause about 30 percent of all serious respiratory illness in children. Adenovirus-4 is a primary cause of severe acute respiratory disease in military trainees.

Although this ambitious program still has far to go, and although disappointments as well as successes have been encountered, a number of significant advances have already been made on the long road toward the ultimate control of acute respiratory diseases.

An Effective Oral Adenovirus-4 Vaccine

Early in World War II, the military became concerned about acute respiratory infections which immobilized large numbers of soldiers in training camps. These acute febrile illnesses, 10 percent of which were pneumonia, and many of which required hospitalization, were a major source of lost manpower and money. An epidemic season at a single camp cost the Army as much as \$10 million.

Much of this acute respiratory disease was traced to the adenovirus, and adenovirus type 4 was pinpointed as the major cause.

Under the Respiratory Vaccine Development Program, an oral adenovirus-4 vaccine has been developed. This vaccine, which was first conceived and produced in the Institute's intramural laboratories, represents a new concept in vaccines. Originally it consisted of a coated, delayed-release capsule which did not break up until it reached the intestinal tract. There the released live virus caused a symptom-free, noncontagious infection which triggered the production of antibodies. This capsule has recently been improved upon by a smaller, pressed tablet which is easier to swallow and which accomplishes the same results.

After adenovirus-4 vaccine proved successful in volunteer studies. It was field tested in about 300 recruits at a Marine training camp. This first field trial was 100 percent successful. The trials were then enlarged. Latest reports from large-scale clinical trials at military bases in several parts of the country show that the vaccine produces excellent results. It has been effective in preventing acute respiratory disease, in interrupting epidemics in progress, and in conferring a certain degree of "herd immunity" on those who remain unvaccinated.

A Promising Parainfluenza Vaccine

Parainfluenza viruses 1, 2, and 3 cause a fifth of the acute respiratory diseases serious enough to hospitalize infants and small children. These viruses, which were first isolated in the Institute's intramural laboratories, spread rapidly from person to person and mainly cause illness in children in the form of croup, bronchitis, and pneumonia.

Separate injectible killed vaccines against each of these virus types were among the earliest developed by the Respiratory Vaccine Development Program. They were first tested for safety in adult volunteers. Then they were given to small children and found to be 90 to 100 percent effective in stimulating a significant rise in protective antibody. Recently the three separate vaccines were combined into a trivalent one, which is now being tested against the natural disease. More than 3,000 children are presently participating in these studies. If the vaccine continues to show success, the studies will be expanded to include larger groups.

The need to raise antibody levels quickly for protection against illness when the disease is prevalent has led to efforts to administer parainfluenza vaccine intranasally. This work is still in a very early stage.

A Disappointing Mycoplasma Pneumoniae Vaccine

Mycoplasma pneumoniae is an organism which shares the features of both bacteria and viruses. First known as the Eaton agent and believed to be a virus, it was identified as a mycoplasma by a scientist in the Institute's intramural laboratories. This organism is a major cause of primary atypical pneumonia in children and young adults. In epidemic years it accounts for 10 percent of all respiratory illness in small children, while in the age group from 10 to 20 years, it causes up to 30 percent of all pneumonia.

The Vaccine Development Program prepared several killed vaccines against *M. pneumoniae*, gradually improving them, increasing their concentration, and lessening their potential to produce allergic reactions. The latest vaccine produced excellent protection against infection in rabbits and hamsters. It was also promising in small-scale studies in humans. However, when large-scale field trials were conducted at military training camps, the vaccine was found to be relatively ineffective. Scientists agree that the antibody produced by *M. pneumoniae* is

capable of protecting against infection, but that the present vaccine does not produce enough antibody in man to afford protection.

In the meantime, other studies supported by the Vaccine Development Program have shown that school-aged children are in the main group affected by *M. pneumoniae* and are largely responsible for its spread. It has also been found that the organism has a long period of incubation (averaging about 3 weeks), which can mask its role in causing infection. Because of this long incubation period, and intranasally administered vaccine might have the advantage of raising antibody titers to protective levels quickly. Studies are being conducted on this method of administration.

The Vaccine Development Program is now directing its efforts toward modifying the *M. pneumoniae* vaccine so that it will stimulate the production of adequate protective antibody.

An Elusive Respiratory Syncytial Vaccine

The respiratory syncytial virus, first isolated in the Institute's intramural laboratories, kills an estimated 5,000 infants a year. This is half of all the babies who die from acute respiratory diseases. Virtually no one is immune to infection with this virus, but infants under 6 months present a particularly difficult problem. Because of the high mortality rate associated with this disease, it is imperative that an effective vaccine be developed against it.

Developing the respiratory syncytial vaccine will not be easy, however. A major obstacle is the difficulty in conferring good immunity. Even a severe infection with the respiratory syncytial virus does not leave the patient immune. Any of several problems may be involved: The virus may be a poor stimulus to antibody production, its antigen (that part of the virus which triggers antibody production) may not be sufficiently concentrated, or there may be a defect in the antibody the human body produces against it. Further problems in producing a vaccine are that the virus is difficult to grow in quantity and the vaccine produced does not keep well in storage.

Very small trials are now in progress in children and in volunteers with a respiratory syncytial vaccine developed under the Vaccine Development Program. But so far it has given little protection against the infection.

As with parainfluenza and *M. pneumoniae*, efforts will be made to administer a respiratory syncytial vaccine intranasally.

Further studies are needed on the respiratory syncytial virus, its antigens, and the antibodies resulting from infection with the organism. A major effort will be exerted by the Vaccine Development Program in the hope of producing an effective vaccine against the virus within the next 5 years.

A Start Toward Rhinovirus Vaccines

The Rhinoviruses are primarily responsible for causing the common cold. Although most of these illnesses are not serious, they do run up formidable medical bills and cause absenteeism, lowered productivity, and poor performance in factory, office, and classroom. In addition, they lower their victims' resistance to other, more virulent infections.

Over the past few years, research scientists have isolated a large number of rhinoviruses. Following a program of testing and identifying distinct types, most of which was sponsored by the Vaccine Development Program, an international nomenclature for rhinoviruses was ratified by the International Microbiology Nomenclature Committee in July 1966. This system includes 55 rhinovirus prototypes against which viruses isolated in the future can be compared and classified.

Vaccine development efforts have progressed to a point where several candidate rhinovirus vaccines are expected to be available for clinical trials in the near future.

A SUMMARY OF ACCOMPLISHMENTS

In the first 5 years of work, the Respiratory Vaccine Development Program has had several successes. An oral adenovirus-4 vaccine has proved highly effective and will soon be tried in over half a million people. A trivalent parainfluenza vaccine has shown early promise. Vaccines against some rhinoviruses are almost ready for testing. Unfortunately, after an encouraging start, results in large trials with an *M. pneumoniae* vaccine have been disappointing. The vaccine will be modified to give better protection before trials are continued. Difficulties are still being presented by the respiratory syncytial virus, hampering efforts to make an effective vaccine against this organism.

A LOOK TO THE FUTURE

In the future, great emphasis will be placed on expanding the field trials of the adenovirus-4 and the trivalent parainfluenza vaccines. Rhinovirus vaccines will be tested as soon as they become available. Strenuous efforts will be made to improve the *M. pneumoniae* vaccine and to perfect a vaccine against the respiratory syncytial virus. Subunit vaccines consisting of parts of a virus will be developed where they are needed to promote better protection or to eliminate undesirable effects caused by the whole virus. Some attempts will be made to develop oral vaccines for respiratory agents other than adenovirus-4. And because nasal antibody is believed to give the best protection against respiratory diseases some efforts will be made to administer vaccines intranasally in the hope of locally stimulating the production of nasal antibody.

RESEARCH REFERENCE REAGENTS PROGRAM

And the research reference reagents program produces, tests, and distributes to research scientists uniform samples of viruses and virologic materials useful in studies of many infectious diseases.

SPECIAL EMPHASIS PROGRAMS

The special-emphasis programs are designed to focus the attention of scientists on important, difficult, or neglected problems; to support the necessary fundamental research by grants or conduct it at the Institute's own laboratories; and to promote the exchange of information among scientists so that gaps in knowledge will be highlighted and opportunities for research will be recognized.

TUBERCULOSIS

The following diseases are those on which attention is now being focused; tuberculosis, which still strikes 50,000 Americans every year—

Senator HILL. We thought at one time we were going to lick that disease. We haven't done that, have we?

Dr. DAVIS. Unfortunately, in the last few years the number of new cases has not continued the decline we noted some decades ago. Actually, there is now almost a plateau of the number of new cases and deaths.

Dr. SHANNON. Mr. Chairman, I don't think there is a chance of licking the disease with the weapons available. Serious thinkers in the field feel that an immunizing agent is not beyond expectations, but this will take time.

Senator HILL. Well, some several years ago I read an article in the London Lancet on BCG. It has not proved so effective over here, has it?

Dr. SHANNON. The problem in this country is that sensitivity to BCG occurs in the population groups that yield a large proportion of new cases, so that this is not effective in dealing with the eradication of tuberculosis in this country.

In other population groups outside of the United States, it has had an effect in reducing the numbers of cases, but it will not eradicate the disease.

Senator HILL. All right, Doctor.

EMPHYSEMA

Dr. DAVIS. Emphysema is a problem, a crippling chronic lung disorder than ranks second only to heart disease as a disabler of workmen over 45; infectious hepatitis, which afflicts upward of 40,000 children and adults a year——

Senator HILL. Talking about emphysema, are we making progress?

Dr. DAVIS. We are making very slow progress.

Dr. SHANNON. I would say, no, sir.

Senator HILL. Well, as long they keep smoking cigarettes——

Dr. DAVIS. As you know, Senator, on the recommendation of this committee, the Congress provided additional funds a year ago.

Senator HILL. We did.

Dr. DAVIS. And I thought you might be interested in knowing just how we are using those funds at the present time.

DISEASES IMMUNOLOGY STUDIES

Senator HILL. How are you using those funds, Doctor?

Dr. DAVIS. We have now about \$1.4 million devoted to the microbial and immunological aspects of chronic bronchitis and emphysema. There are studies of the secretions and ciliary action of the respiratory tract.

There is an epidemiological study going on in Michigan in a large population group. There is a study in Oklahoma of three races, trying to determine whether a genetic factor is involved.

ANIMAL MODEL SEARCH

A registry of cases has been established at the University of Colorado, and there is a search for animal models for the disease. In this way we have made those funds available.

Senator HILL. Are you making progress?

Dr. DAVIS. We are making progress on doing more work. The work has increased markedly.

INSIDIOUS DISEASE RATE INCREASE

Senator HILL. But you haven't got an answer yet?

Dr. DAVIS. No.

Dr. SHANNON. It increases at an insidious rate until it becomes a national problem.

Senator HILL. We didn't hear much about it in the old days. When we started smoking cigarettes, we didn't know much about it. Did we? Go ahead, sir, speak further.

Dr. SHANNON. You stopped me.

Senator HILL. Is there anything you would like to add, Doctor?

Dr. SHANNON. No, sir.

Senator HILL. All right, Doctor.

CHRONIC DEGENERATIVE DISORDERS

Dr. DAVIS. Other special-emphasis programs are chronic degenerative disorders, such as multiple sclerosis, whose causes are still a mystery; drug-resistant parasitic and bacterial diseases, such as falciparum malaria and meningococcal and staphylococcal infections; allergies,

such as hay fever, asthma, and food and drug hypersensitivities, and the less familiar autoimmune disorders, in which the body seems to turn on some of its own cells as if they were a harmful invader; and such virus diseases as influenza and the common cold, which might be effectively controlled through treatment with chemical or biological compounds rather than by means of vaccines.

Senator HILL. You have quite a battlefield, don't you, Doctor?

Dr. DAVIS. Yes; we have a wide scope of interest, and this is due to the concern we have for the primary causes of so many diseases, and the fact that techniques have been so that we can identify the infectious causes.

FUNDAMENTAL RESEARCH ROLE OF SCIENTISTS AND GRANTEES

I cannot stress too much the essential role of fundamental research, conceived and conducted by the Institute's scientists and grantees, in the attack on allergic and infectious diseases.

It is such research, which explores new ideas and new techniques, that makes all medical advances possible. Every technique, every drug, and every vaccine used today to prevent, treat, or relieve allergies and infectious diseases, had its beginning in the laboratory of some fundamental research scientist.

NOBEL PRIZE GRANTEE AWARDS

The same is true of every other field of medical practice. That is why the Nobel Prize in medicine and physiology invariably goes to someone who has worked on the frontiers of virology, molecular biology, genetics, cell physiology, biochemistry and immunology—where many of our own scientists and grantees are working today.

And speaking of the Nobel Prize, I think this committee would be interested in knowing that in the past 13 years, fundamental research scientists—microbiologists, immunologists, geneticists—who were being supported by grants from this Institute have won five Nobel Prizes in recognition of their outstanding achievements and their contributions to the advancement of human knowledge and the relief of human suffering.

Senator HILL. That was gratifying to you; wasn't it, Doctor?

Dr. DAVIS. This is gratifying to all of us.

RESEARCH ADVANCES

Time does not permit me to discuss all the research advances reported by the Institute's scientists and grantees in 1966. Many of these are described extensively, however, in the special reports submitted earlier to the committee, including our detailed "Highlights" report.

I shall briefly describe here, therefore, just two representative and highly encouraging accomplishments of the past year, one from the broad field of immunology, the other from virology.

TISSUE TRANSPLANTATION PROGRAM

The first encouraging advance came in our tissue transplantation program. The short-term goal of that program is a battery of tissue-

typing tests for matching donors and recipients of organ transplants—in much the way that blood donors and recipients are matched today—and thereby reducing the danger of organ rejection due to tissue incompatibility.

Reports by scientists engaged in the program encourage me to say that not only have prototype tissue-typing tests been developed but they appear to work. One investigator has already matched unrelated prospective donors and recipients of kidney transplants, and the success rate of transplants between these unrelated but matched persons has approached that of transplants between relatives.

Senator HILL. That is encouraging, isn't it, Doctor?

Dr. DAVIS. Yes; this is a significant advance that has been developed in the last 2 years, largely from the support of funds appropriated to this Institute.

EUROPEAN DEVELOPMENT OF TISSUE TYPING TECHNIQUES

Dr. SHANNON. The basic techniques of tissue-typing were largely developed on the Continent of Europe rather than in the United States. When it was decided to undertake broad studies in this particular area, we had the advantage of highly effective prior studies.

Senator HILL. I believe it was primarily in Germany, wasn't it?

Dr. DAVIS. In Holland.

Senator HILL. In Holland?

Dr. DAVIS. In Holland. There are two centers, one at Leyden, and one in Amsterdam.

As Dr. Shannon has said, there are others, too, one in Paris, and one in Italy.

We have incorporated these research workers into our program from the standpoint of advice, and now have a very effective program going, utilizing the leads that have been provided and are now being actively advanced in this country in many different centers.

Senator HILL. We have been fortunate to have centers in those foreign lands.

Dr. SHANNON. The better part of 5 to 10 years work conducted in those centers was available as the basis for our more recent work.

Senator HILL. It meant you did not have to do that work?

Dr. SHANNON. Yes.

ORAL VACCINE ADENOVIRUS

Dr. DAVIS. Last year I reported to this committee on the first successful field trial of an oral vaccine adenovirus type 4, the major cause of outbreaks of severe acute respiratory disease at military training camps. That vaccine was the first payoff of our nationally organized vaccine development program. It is a tribute to the fundamental research scientists in our own intramural laboratories who conceived it and to the scientist-administrators in our collaborative program who directed its development and evaluation.

PARAINFLUENZA VIRUSES VACCINES

This year I am pleased to report another important advance: Experimental vaccines against three types of parainfluenza viruses,

major causes of croup and bronchitis in young children, showed promise in early tests at Children's Hospital of the District of Columbia.

The vaccines, which were developed in our own intramural laboratories, were found to be completely safe and 90 to 100 percent effective in stimulating a significant rise in the level of protective antibody in youngsters. The three vaccines have been combined into a single preparation which is now being evaluated at Children's Hospital and the Universities of California and Colorado.

TONSILS AND ADENOIDS

Senator HILL. Talking about croup, what part do the tonsils and adenoids play in this?

Dr. DAVIS. The role of the tonsils and adenoids is apparently confined to the very early years of life.

Senator HILL. Many folks have them taken out before they reach the later years, don't they?

Dr. DAVIS. They used to, but that is not so common today, because it seems clear that they have an important role in developing the immune mechanism and providing certain types of cells which are necessary to produce antibodies.

Only in instances where they become infected, or they become so enlarged that they obstruct the breathing, do pediatricians now advise their removal.

Senator HILL. That is interesting, because it is a different idea from the old days.

Dr. DAVIS. We have learned much more about what their role and function is, and the criteria for their removal.

Senator HILL. Yes.

VIRUSES AND VIRUS DISEASES

Dr. DAVIS. It is not by accident—nor do I believe it has escaped the attention of the committee—that a good part of this statement and an even larger part of our special reports deal with the subject of viruses and virus diseases. This emphasis simply reflects the paramount role of virology in the Institute's program.

Medical science has much to learn about viruses and the diseases they cause. For example, many viruses, such as those believed to cause infectious hepatitis and epidemic diarrhea, still cannot be isolated and identified due to a lack of proper techniques and adequate facilities. But much ground has been gained.

Senator HILL. Do you think you have gained much ground, Doctor?

IDENTIFICATION

Dr. DAVIS. Yes; in the identification of viruses, particularly in the last 15 years. There are hundreds of viruses now identified of which we knew nothing 15 years ago, largely due to new techniques and intensified work on the problem.

We know that most viruses are so small that they can be seen only with the aid of an electron microscope. Pictures taken through such an instrument show a variety of forms: cubes, rods, spheres, spirals,

and some even more complex. Essentially a virus consists of a protein shell arranged around long, coiled strands of nucleic acids, either DNA (deoxyribonucleic acid) or RNA (ribonucleic acid). These coiled molecules, shaped like a long ladder twisted in a continuous spiral, carry the complete coded genetic instructions for reproduction of the virus.

INFECTION

One of the most important findings of virologists is that infection by a virus does not necessarily follow a single course; namely, the swift virus reproduction and the development of a specific infectious disease, such as influenza, with resulting cell destruction. That is only one of several possible courses.

REPRODUCTION

In another, reproduction may be slow, without the development of clinical disease. Or the virus may become a latent boarder in the cell for an indefinite period. Should certain biochemical changes take place in the host cell, however, the slumbering virus could change into a virulent form. That is what some investigators suspect happens in chronic degenerative neurological disorders.

CELL TRANSFORMATION

Still another possibility is that the virus genetic material (DNA or RNA) may take over control of the machinery of the host cell. Instead of reproducing itself, causing an acute infection, and killing the cell, the virus may transform the cell. The result is cell growth gone wild—or cancer.

1967 APPROPRIATION AND 1968 BUDGET REQUEST

To carry on the research attack against viruses and the many other microbes and allergens that make man ill, cripple him, and cut short his life, the 1968 request for the National Institute of Allergy and Infectious Diseases is \$94,422,000, including \$500,000 for the Gorgas Memorial Laboratory.

A comparable operating level for 1967 is \$87,244,000. The 1968 funds requested provide a net increase of \$3,930,000 for research grants; \$567,000 for fellowships; \$148,000 for training grants; \$1,258,000 for laboratory and clinical research; \$1,071,000 for collaborative research and development; \$67,000 for biometry, epidemiology, and field studies; \$124,000 for review and approval of grants, and \$13,000 for program direction.

DEPARTMENT AND BUREAU OF THE BUDGET REDUCTION

Senator HILL. Now, doctor, the Department reduced your request by some \$582,000 and the Bureau of the Budget by \$1,664,000, making a total reduction of \$2,246,000 from your request—that much reduction.

GRANT AND TRAINING APPLICATIONS BACKLOG

What will be the effect of that, Doctor?

Dr. DAVIS. The effect will be that we will be unable to pay about a hundred grant applications, and some 11 or 12 training grant applica-

tions, which we would have been able to pay had we gotten the original request.

Senator HILL. Do you have any backlog on these two things now?

Dr. DAVIS. Yes; we do have a backlog. We have a backlog of 125 grants, research grant applications for this year amounting to about \$3 million.

Senator HILL. Which you cannot pay?

Dr. DAVIS. Which we will not be able to pay, and we have training grant applications of about 10 to 12, which we are unable to pay.

Senator HILL. These applications have all been approved by your council?

Dr. DAVIS. Yes, the Study Sections and the council too.

KIDNEY TRANSPLANTS

Senator HILL. Doctor, do many patients survive for 2 years or more after kidney transplants?

Dr. DAVIS. Yes. There is a kidney transplantation registry now being maintained by Dr. Murray at Peter Bent Brigham Hospital in Boston. He has records now from some 1,200 transplants. They show that transplants made from siblings or parents will survive for 2 years in about 70 to 75 percent of the cases under present techniques.

These results of course are much better than they were a few years ago.

Senator HILL. But only 2 years?

Dr. DAVIS. The longest survival for a kidney transplant is 10 or 11 years.

Senator HILL. Was that from a twin?

Dr. DAVIS. That was from a twin, sir; you are quite right. The woman who was the recipient has had two children since that time and is alive and well. Furthermore, her twin who contributed the kidney is alive and well and has since had children.

Senator HILL. That is interesting. I am a twin myself.

We still have a good deal to do on this transplant business; don't we?

Dr. DAVIS. Yes. This is a very active field, one which is a result of new techniques and concepts in the last few years. We are moving ahead in very rapid fashion.

Actually, I mentioned there have been 1,200 transplantations in the world. About 600 of these are successful in that there are about 600 people now alive because of transplants of kidneys.

So far as we know, the kidney is about the most successful transplant and about the only one which has been done clinically with any success.

ANIMAL ORGAN TRANSPLANTS (OTHER THAN KIDNEY)

Experimental work is going on in animals with other organs, but so far—

Senator HILL. Not very successful?

Dr. DAVIS. Not nearly far enough for any serious application to humans.

FATAL KIDNEY DISEASE

Senator HILL. What do you think is the ultimate solution to what we now know as fatal kidney disease?

Dr. DAVIS. We must know much more about the primary causes of fatal kidney disease, and what time of life it begins. We need to have much more work on the immunologic aspects of it. There is considerable experimental work, particularly in rabbits, which indicates that a soluble antigen-antibody complex is formed in the body which has a deleterious and destructive effect on the tissues of the kidney.

We need to know much more about this in the primary stages.

We need to know much more about the role of microbial agents, viruses, and urinary tract infections, in the early stages, because the disease we see as kidney disease is the end result of a relatively long process of disease activity.

Senator HILL. It doesn't come about overnight?

Dr. DAVIS. No, it does not.

We need to know what those steps are, what the primary causes are.

Senator HILL. You are now working on those steps?

Dr. DAVIS. This is what is being done through research grant support and freely ranging scientist-originated research.

DEGENERATIVE DISEASES

Senator HILL. You spoke about the accelerated work on degenerative diseases.

Do you have any specific leads that hold out hope for making real progress in this field?

VIRUS ROLE IN NEUROLOGIC DISEASE PRODUCTION

Dr. DAVIS. We are of course particularly examining the role of viruses. Along with the Neurological Institute we are interested in the role of viruses in producing neurologic disease, and I have mentioned several times in the past the studies that are going on at the Rocky Mountain Laboratory in sheep, on a disease that closely resembles certain human neurologic diseases. These studies indicate that the disease is caused by a virus, that the virus can be identified by specific tests and transmitted to mice. When we get such a model, it will help us to attack the much more immediate human problems.

Senator HILL. You are working on that in the Rocky Mountain Laboratory now?

Dr. DAVIS. Yes. And we have a number of grants which have been initiated last year on this general problem.

VIRUS ROLE IN CANCER

We are also deeply interested in the role of viruses in cancer.

I know Dr. Endicott mentioned yesterday the studies on the role of viruses in cancer. This work has drawn very heavily on the basic knowledge developed over the years in the study of acute virus infections.

So that we now do know ways of identifying viruses, we know what viruses are like, we know how to cultivate them in animals, how to cultivate them in tissue cultures, and how to handle them.

Senator HILL. Then you are encouraged. You are making progress? You haven't got the answers yet, but you are making progress?

Dr. DAVIS. We think we are on the right road.

Senator HILL. Is there anything else you would like to add, Dr. Shannon?

Dr. SHANNON. No, sir.

Senator HILL. Doctor, you have brought us a fine statement. We appreciate it. It is very fine.

NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES

STATEMENT OF DR. FREDERICK L. STONE, DIRECTOR, ACCOMPANIED BY GORDON J. KLOVDAHL, EXECUTIVE OFFICER, AND MRS. EMMA LOU AKERS, BUDGET OFFICER, NATIONAL INSTITUTES OF GENERAL MEDICAL SCIENCES; DR. JAMES A. SHANNON, DIRECTOR, AND RICHARD L. SEGSEL, EXECUTIVE OFFICER, AND LELAND B. MAY, ACTING FINANCIAL MANAGEMENT OFFICER, NATIONAL INSTITUTES OF HEALTH; DR. LEO J. GEHRIG, DEPUTY SURGEON GENERAL; CHARLES MILLER, CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

"NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES

"For expenses not otherwise provided for, necessary to carry out the purposes of the Act with respect to general medical sciences, [\$145,113,000, of which \$1,000,000 shall be available for] including the training of clinical anesthesiologists, \$160,284,000."

Amounts available for obligation

	1967	1968
Appropriation.....	\$145,113,000	\$160,284,000
Transfer to "Operating expenses, Public Buildings Service, General Services Administration".....	-25,000	-----
Comparative transfers within NIH.....	+968,000	-----
Total.....	146,056,000	160,284,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants:						
Research.....		\$75,172,000		\$85,263,000		+\$10,091,000
General research support grants.....		(6,441,000)		(8,233,000)		(+1,792,000)
Scientific evaluation grants.....		(1,615,000)		(1,471,000)		(-144,000)
Pharmacology-toxicology research.....		(3,500,000)		(3,500,000)		(0)
Anesthesiology and diagnostic radiology centers.....		(500,000)		(1,000,000)		(+500,000)
Fellowships.....		19,400,000		20,910,000		+1,510,000
Training.....		43,735,000		45,729,000		+1,994,000
Direct operations:						
Collaborative research and development.....	2	3,429,000	2	3,547,000	0	+118,000
Training activities.....	20	291,000	30	484,000	+10	+193,000
Review and approval of grants.....	130	2,778,000	130	3,023,000	0	+245,000
Program direction.....	57	1,226,000	59	1,328,000	+2	+102,000
Total obligations.....	209	146,031,000	221	160,284,000	+12	+14,253,000
Unobligated balance, reserve.....		25,000				-25,000
Total obligations and balance.....	209	146,056,000	221	160,284,000	+12	+14,228,000

1992 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	209	221	+12
Full-time equivalent of other positions.....	4	4	0
Average number of all employees.....	199	215	+16
11 Personnel compensation:			
Permanent positions.....	\$1,903,000	\$2,084,000	+\$181,000
Positions other than permanent.....	42,000	42,000	-----
Other personnel compensation.....	32,000	32,000	-----
Total personnel compensation.....	1,977,000	2,158,000	+181,000
12 Personnel benefits.....	190,000	214,000	+24,000
21 Travel and transportation of persons.....	146,000	193,000	+47,000
22 Transportation of things.....	18,000	23,000	+5,000
23 Rent, communications, and utilities.....	112,000	152,000	+40,000
24 Printing and reproduction.....	19,000	24,000	+5,000
25 Other services.....	97,000	115,000	+18,000
Project contracts.....	3,393,000	3,506,000	+113,000
Payment to "National Institutes of Health management fund".....	1,654,000	1,879,000	+225,000
26 Supplies and materials.....	57,000	58,000	+1,000
31 Equipment.....	61,000	60,000	-1,000
41 Grants, subsidies, and contributions.....	138,307,000	151,902,000	+13,595,000
Total obligations by object.....	146,031,000	160,284,000	+14,253,000

Summary of changes

1967 enacted appropriation.....	\$145,113,000
Transferred to "Operating expenses, Public Buildings Service, General Services Administration".....	—25,000
Unobligated balance, reserve.....	—25,000
Comparative transfers within NIH.....	+968,000
1967 total estimated obligations.....	146,031,000
1968 estimated obligations.....	160,284,000
Total change.....	+14,253,000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
Mandatory: 1. Annualization of new positions authorized in 1967.....				\$14,000
Program:				
1. Research grants.....		\$75,172,000		10,091,000
2. Fellowships.....		19,400,000		1,510,000
3. Training grants.....		43,735,000		1,994,000
4. Collaborative research and development.....		3,426,000		114,000
5. Training activities.....	2	264,000	10	177,000
6. Review and approval of grants.....	130	1,540,000		59,000
7. Program direction.....	57	840,000	2	78,000
Subtotal, program increases.....			12	14,023,000
Payment to "National Institutes of Health management fund" for centrally furnished services:				
Training activities.....	17,000			
Review and approval of grants.....	185,000			
Program direction.....	23,000			225,000
Gross increases.....				14,262,000
DECREASES				
1 day less pay in 1968.....				—9,000
Total net change requested.....			+12	+14,253,000

EXPLANATION OF CHANGES

Research grants.—The \$10,091,000 program increase includes \$7,943,000 for regular projects (noncompeting continuations, \$6,928,000; competing projects, \$697,000; and supplementals, \$318,000), \$500,000 for anesthesiology and diagnostic radiology research \$1,792,000 for general research support grants and an offsetting decrease of \$144,000 for scientific evaluation transferred to NIMH.

Fellowships.—The program increase of \$1,510,000 includes \$1,000,000 for research career development awards, \$522,000 for special fellowships, and \$184,000 for postdoctoral awards offset by a decrease of \$196,000 in predoctoral awards.

Training grants.—The net increase of \$1,994,000 reflects increases of \$1,300,000 for noncompeting continuations, \$2,000,000 for competing continuations offset by decreases of \$1,356,000 for new grants in the graduate training program, and \$50,000 for scientific evaluation.

Collaborative research and development.—The increase of \$114,000 will support minimal growth for research contracts in the program areas of macromolecular separations, pharmacology-toxicology and genetics.

Review and approval of grants.—The program increase of \$59,000 will support an increase in full-time employment of professional staff required to handle the additional workload in the grants program.

Program direction.—The program increase of \$78,000 and two positions will strengthen the immediate staff in the Office of the Director.

Research grants

	1967 estimate	1968 estimate	Increase or decrease
Regular programs.....	\$63, 116, 000	\$71, 059, 000	+7, 943, 000
Special programs.....	12, 056, 000	14, 204, 000	+2, 148, 000
Total research grants.....	75, 172, 000	85, 263, 000	+10, 091, 000

INTRODUCTION

The activities of NIGMS constitute a program of fundamental research which have general relevance to, are supportive of, and essential to many categorical decisions. These activities have been centered in this Institute to provide a *central focus for many areas of science* that can best be supported and maintained within a central organizational structure. This Institute in addition has program responsibility in specially designated areas that do not logically fit into the major categorical structure of the remainder of NIH.

The categorical structure of each of the Institutes, in general, reflect their concern with a number of major disease entities such as heart disease, cancer, etc., or areas of scientific activity such as aging or child development. The programs contain a mixture of that which is fundamental to the disease under study and that which is applied and developmental. In such a structure there is an obvious need for program development oriented toward the development of a number of disciplines which underpin the activities of the several Institutes. For example, intrinsic in all categorical programs is a broad dependence on biochemistry, pharmacology, pathology, etc., and they will support research and training in each of these areas only insofar as these activities are essential for the purpose of the Institutes' specific mission—they will not in general conduct programs which will be in direct support of these disciplines as such.

The National Institute of General Medical Sciences has this responsibility and discharges it in a very specific manner. It has responsibility for the conduct of predoctoral training except so far as a minor portion is performed within a combined program project. It has the further responsibility to assay aggregate activity in both research and training and to provide for adequate balance and coverage. It must undertake specific program areas in general support and in programmed activity.

Although the National Institute of General Medical Sciences supports a broad program in most of the basic biomedical areas leading to the study of health and disease in man, it is difficult to delineate its precise nature other than to say that the program seeks to improve clinical care and enhance basic knowledge. However, certain specific objectives can be identified with general goals and with the advancement of public health. For example, a program designed

to automate clinical laboratories to provide faster, cheaper, more accurate, and more frequent analysis to aid in the diagnosis of disease would be of distinct value in the practice of medicine. The development of such a system is possible under the present state of technology, but would require relatively large sums of money to design process control and computer operation of clinical laboratories and to construct a demonstration unit. The money invested in such a program, however, would be repaid many times over in the reduction in the cost of hospital care.

Trauma is another research area offering great potential benefit to the American people. Twenty-two million bed days a year at a total cost of about \$16 billion are now invested in the care of accident victims. A small reduction of even five percent in the length of hospital stay, in the cost of treatment, or in the rehabilitation of the accident patient could result in savings of hundreds of millions of dollars yearly. Again, much of the basic knowledge and technical skill are available to develop such a program. Research in this area, however, requires expensive clinical facilities and highly skilled teams of medical scientists.

Distinct improvements are also possible in the area of the clinical sciences. Every patient undergoing surgery requires anesthesiology and usually some form of diagnostic radiology. Improvements in techniques of patient monitoring, radiology, and automated anesthesia could result in tremendous savings in the general area of patient care. In these clinical specialties, a basic-science base in biomedical engineering and control theory must be constructed before the technical innovations can be produced. As a result, goals in this area are not as sharp as those mentioned above.

A more indefinite though obtainable goal, and one of incalculable benefit to medical care, concerns application of knowledge of the structure and function of drugs to new methods of treatment in the area known as clinical pharmacology. In this field a basic structure of knowledge must be built on the metabolism of drugs with new therapeutic effects and the study of the relationship of one drug to another when they are administered concurrently. Once this basic information has been obtained, it will be possible to design drugs with greater therapeutic efficacy and lower toxicity.

Of great importance even though the knowledge they yield is not of an applied nature are programs in chemical genetics, which may provide better understanding of urban population problems, new social structures, and man's capacity for adaptation; and finally, the general support of basic science which is indispensable to the growth and development of applied research, from which eventually come practical advances in health.

The net increase of \$7,943,000 for regular research grants will be used as follows: \$6,928,000 for noncompeting continuations for increased costs and support of 168 additional noncompeting continuations, \$697,000 for competing projects and \$318,000 for supplemental awards.

The net increase of \$2,148,000 for special programs includes increases of \$1,792,000 for general research support grants and \$500,000 for anesthesiology and diagnostic radiology centers offset by a decrease of \$144,000 for scientific evaluation and planning functions transferred to the National Institute of Mental Health as part of the Public Health Service reorganization.

Program plans in 1967 and 1968

The next year will see continued support in those areas of science which offer promise for the future (genetics, molecular biology, energetics) but with a shift in support towards the physical sciences and their application to biological problems. Along with the stress to be placed on physical methods there must, of necessity, come an emphasis in practical application to bring the fruits of technology and quantitative biology to the physician and the bedside.

A program for the broad support of the basic medical sciences which may be applied to problems of human health must of necessity be very diverse. It is determined in part by the interest of the scientific community in problems of current emphasis as determined by the receipt of applications from that community. The mass of applications coming to this Institute in the form of so-called "undifferentiated" or "unstructured" applications may actually be grouped into definite programs indicating trends of science. On this basis this Institute will support programs which may eventually result in information on how cells react in disease states, bioenergetics which may be related to problems of health and basic nutrition and to the way which energy is transferred in the individual cell. Problems of human adaptability and the way in which the human organism

responds to diverse environment which may some day permit man to live on the bottom of the sea or at high altitude are under exploration.

The large multidisciplinary areas of so-called unstructured research comprises about 80 percent of the budget of this Institute. Important and significant findings may be startling and unpredictable not only within the program of the National Institute of General Medical Sciences as a special case, but within any large collection of research projects where the fundamental knowledge is applied to a specific clinical problem.

Studies of the mechanisms underlying life processes through the application of the principles, concepts, and tools of biophysics, biomathematics and bio-engineering are the mainstay of the biophysical sciences program. Support is provided for studies devoted to the development and application of instruments and techniques including X-ray crystallography, mass spectrometry, electro-chemistry; the determination of molecular structure; and construction of special purpose equipment necessary in the investigation of the quantitative aspects of the biomedical sciences, including development of automated clinical laboratories and research on patient monitoring. Support is also provided for research projects devoted to systems analysis, feedback controls, operations research, bionics, computer technology, ultrasound in diagnosis, and clinical monitoring devices and systems.

Particular stress will be placed on projects devoted to clinical applications of biomedical engineering concepts, such as clinical use of ultrasound visualization systems and their diagnostic application. Research on biomaterials concerned with the theoretical and practical application of metals and plastics in repairing or replacing tissues affected by trauma or disease will be encouraged.

Clinical research concerned with human and animal study, employing basic biochemical and biophysical principles and concepts, is the primary mission of the medical sciences program. Special emphasis will be placed upon investigation of mechanisms and treatment of burns, shock, wound-healing, tissue repair, and trauma in 1968.

PHARMACOLOGY-TOXICOLOGY PROGRAM

A program of pharmacology-toxicology centers was initiated in 1966 at a level of \$1,000,000. These centers are university-based resources for both research and training and are thoroughly involved in graduate education. They are oriented to problems arising from the use of drugs and are designed to provide ready access to clinical material and to provide specialized laboratory and animal facilities. Careful consideration is given to the geographical location of these centers, as they must be able to compete for top-level scientific personnel in order to provide the scientific leadership necessary. Hence, locating them in appropriate academic, scientific, and cultural environments is given primary consideration, and has been found to be conducive to attracting the high caliber of manpower necessary.

Program plans in 1967 and 1968

Approximately 8 centers or large program projects will be supported in 1968. This includes a center now being fully developed at the University of Iowa, an active center at the University of North Carolina in Chapel Hill, and a center in clinical pharmacology at Emory University.

Under the Iowa grant, a vigorous research and training program in toxicology and biochemical pharmacology is under way. Long-range plans have been made to accommodate the center in major construction being projected for the medical school complex at Iowa City.

The project at Emory University proposes to investigate human drug metabolism and toxicology.

ANESTHESIOLOGY AND DIAGNOSTIC RADIOLOGY CENTERS

Few surgical procedures can be performed today without the use of a general anesthetic. Hundreds of thousands of patients are exposed each year to a variety of anesthetic drugs. There is a need for greater understanding of anesthetic compounds of new drugs to alleviate pain or to cause muscle relaxation and new methods for the handling of the anesthetized patient through patient monitoring devices and intensive care units. A center to explore this wide area of clinical medicine is necessary and NIGMS proposes to establish at least one such center during the coming year.

Radiology is an absolutely essential factor in assessing the damage, determining appropriate treatment, plotting the course of recovery, and evaluating the success achieved in many disease entities, including in particular coronary artery disease. The radiologist today must extend his services to more people in a given period of time which requires the development of computer techniques for storage and retrieval of X-ray film, new television techniques which will permit him to examine several patients from a central room and the development of new types of X-ray tubes and methods for the intensification of images. Such research leading to direct clinical application can best be done in a center where engineers, radiologists, basic medical scientists and physicians can be brought together in a cooperative venture to improve radiological science.

The development of a center for examination development and evaluation of new techniques in diagnostic radiology is planned in 1968 to bring the fruits of biomedical engineering to improvement of X-ray investigation and to develop new methods of visualization of tissues.

Research grants program analysis

Fields	1967 estimate	1968 estimate	Increase or decrease
Biochemical sciences.....	\$25,420,000	\$27,820,000	+\$2,400,000
Biological sciences.....	14,400,000	16,200,000	+1,800,000
Biophysical sciences.....	17,800,000	20,436,000	+2,636,000
Medical sciences.....	5,496,000	6,603,000	+1,107,000
Subtotal, regular program.....	63,116,000	71,059,000	+7,943,000
General research support grants.....	6,441,000	8,233,000	+1,792,000
Scientific evaluation and planning.....	1,615,000	1,471,000	-144,000
Pharmacology-toxicology research.....	3,500,000	3,500,000	-----
Anesthesiology and diagnostic radiology centers.....	500,000	1,000,000	+500,000
Total research grants.....	75,172,000	85,263,000	+10,091,000

Distribution of research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuation.....	1,053	\$38,263,000	1,221	\$45,191,000	+168	+\$6,928,000
2. Competing projects.....	580	23,091,000	535	23,788,000	-45	+\$697,000
3. Supplementals.....	(55)	1,762,000	(76)	2,080,000	(21)	+\$318,000
4. Subtotal, regular program.....	1,633	63,116,000	1,756	71,059,000	+123	+7,943,000
5. General research support grants.....		6,441,000		8,233,000		+1,792,000
6. Scientific evaluation and planning grants.....		1,615,000		1,471,000		-144,000
7. Pharmacology-toxicology research.....		3,500,000		3,500,000		-----
8. Anesthesiology and diagnostic radiology centers.....		500,000		1,000,000		+500,000
9. Total research grants.....	1,633	75,172,000	1,756	85,263,000	+123	+10,091,000

Fellowships

	1967 estimate	1968 estimate	Increase or decrease
Total fellowships.....	\$19,400,000	\$20,910,000	+\$1,510,000

INTRODUCTION

The aims of the Research Fellowships Program of the National Institute of General Medical Sciences are two in number. One is to increase the supply of manpower for the research needs of the country by the support of young capable investigators reviewed on an individual basis, and, secondly, to supply Special Fellowships Awards, Postdoctoral Fellowships and Career Development Awards

to those more senior individuals who have already demonstrated a marked capacity for biomedical research in order to develop new skills, greater competency in clinical or basic science areas, or to permit training in multidisciplinary approaches to the biomedical sciences. This program is administered in a manner to supplement or extend the training provided through training grants.

Program plans in 1967-1968

Predoctoral Fellowships are awarded to graduate students who are seeking a research degree in the biomedical sciences or in the sciences which may be closely related to better clinical care such as biomedical engineering or biomathematics. Support is now provided to predoctoral research fellows in more than 120 institutions. It is anticipated during the coming year that the number of institutions in which predoctoral fellowships are awarded will gradually increase as this Institute attempts to attain, without lowering standards, a wider geographical distribution of fellowships. At the same time the number of fellowships awarded in departments which also have training grants will be decreased. It is our belief that the support of graduate students is better obtained through the milieu of a training grant than through the support of the individual predoctoral student for those demonstrably able and productive departments that have a firm record of successful training over the years.

Postdoctoral Fellowships provide support for one, two, or three years of training to individuals who have already achieved a research degree. Such programs are structured heavily towards those areas of the biomedical sciences in which new advances are being made such as clinical pharmacology and toxicology, biomedical engineering and mathematics. The development of a program in clinical pharmacology utilizing the best skills of the basic pharmacologist, together with the talents of the clinician, can be best mounted by postdoctoral training of Ph. D.'s and M.D.'s in this area. Such postdoctoral training can be achieved by the postdoctoral fellowship and by special fellowships awarded to highly competent individuals who wish to continue or increase their training in a particular area.

Special Fellowship support will be provided to carefully selected individuals interested in obtaining advanced or highly specialized training for research. Special program emphasis will be placed in such areas as pharmacology and toxicology, biomedical engineering, selected areas of anesthesiology, diagnostic radiology and surgery.

The Career Development Award Program provides stable support for up to five years or more for individuals who have demonstrated a capacity for research in a productive scientific environment and who have not yet obtained recognition as established investigators. In 1968 it is planned to continue program emphasis in those areas mentioned above such as pharmacology and toxicology, and biomedical engineering. Postdoctoral, Special and Career Development Awards will also be awarded in the fields of anesthesiology, radiology and surgery in an attempt to develop these fields to their fullest research potential.

Because of the decreasing predoctoral program and the rapidly increasing postdoctoral research support program proposed, the 1968 estimates will support 150 less predoctoral fellowships than in 1967, but will permit a continuation of the shift of program from predoctoral to postdoctoral emphasis. The special fellowship and the career development award category will be expanded as will certain areas of postdoctoral fellowships (biomedical engineering), while certain other areas in this later category (organic chemistry, biology, etc.) will be decreased, resulting in slightly fewer postdoctoral students in 1968.

Distribution of fellowships

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Continuations:						
(a) Noncompeting.....	1,389	\$12,158,000	1,232	\$13,477,000	-137	+\$1,318,000
(b) Competing.....	88	1,176,000	89	1,390,000	+1	-214,000
2. Supplementals.....	(300)	178,000	(300)	182,000	0	-4,000
3. New grants.....	589	5,887,000	599	5,861,000	+10	-26,000
4. Total fellowships.....	2,066	19,400,000	1,940	20,910,000	-126	+\$1,510,000

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Fellowships (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Predoctoral.....	1,240	\$7,936,000	1,090	\$7,740,000	-150	-\$196,000
2. Postdoctoral.....	319	2,382,000	285	2,566,000	-34	+184,000
3. Special.....	146	1,688,000	183	2,210,000	+37	+522,000
4. Research career:						
(a) Career.....	44	1,180,000	42	1,180,000	-2	-----
(b) Development.....	317	6,214,000	340	7,214,000	+23	+1,000,000
5. Total fellowships.....	2,066	19,400,000	1,940	20,910,000	-126	+1,510,000

Training grants

	1967 estimate	1968 estimate	Increase or decrease
Total training grants.....	\$43,735,000	\$45,729,000	+\$1,994,000

INTRODUCTION

The Graduate Research Training Grants program of the National Institute of General Medical Sciences has several fundamental goals: (1) to increase the numbers of highly qualified personnel in the basic medical sciences and in certain general clinical areas; (2) to improve the environment in which such takes place; and (3) to expand the opportunities for research training in rapidly developing sciences such as biomedical engineering.

Training grant awards now support programs in the basic medical science departments of medical schools, including biochemistry, physiology, the anatomical sciences, microbiology, pharmacology, and, in some cases, genetics, biophysics, and related fields. About 80 percent of all trainees are seeking the Ph. D. degree but support is provided for a large number of postdoctoral research trainees in certain clinical and non-clinical areas such as anesthesiology, radiology, surgery, pathology, epidemiology, and clinical pharmacology.

Because many of the biomedical researchers are not trained in medical schools, approximately one-third of NIGMS training grants support basic biological and behavioral, science training programs in university graduate schools, schools of public health, schools of veterinary medicine, and, to a limited degree, schools of engineering (biomedical engineering program).

During the current fiscal year, the research training program will provide support in more than 20 different disciplinary areas, and more than 4,000 individuals as full-time predoctoral trainees and about 1,000 postdoctoral trainees will receive training. Recent data indicate that NIGMS supports about 40 percent of all predoctoral biomedical science training in the United States.

The net increase requested for 1968 will support increased costs of non-competing continuations and 20 additional competing continuations.

Program plans in 1967 and 1968

Attempts were made last year to increase the quantity and quality of research training programs in surgery, radiology, and anesthesiology because of the marked deficit in qualified researchers, and in those competent to train others, in these areas so vital to the diagnosis and treatment of disease.

As a result, increases in both the number of students and number of programs were made. During the current year the programs will continue to expand at a modest rate. Present indications are that the trainees in anesthesiology (research) will increase from 29 in 1967 to 78 in 1968; in radiology from 6 to 45 in the same period, and in surgery from 18 to 122. New training programs in clinical anesthesiology will be launched to improve the quality of clinical care and bring the latest research innovations, after trial and evaluation, to the bedside.

The Institute feels that it is important that emphasis be placed on increasing the number of full-time students working toward a definite career goal. As a

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result, programs are encouraged to support only full-time students on stipends. This may reduce the apparent count of students, many of whom were previously supported on a part-time basis.

The training grants are heavily concentrated in the predoctoral training areas where the environment is an important factor in training for the beginning graduate student.

The funds available in 1968 will permit the continuation of 20 high quality training programs in areas of research emphasis such as biomedical engineering, surgery, radiology, and anesthesiology. At the same time 32 programs of lesser quality will be phased out. Because of increased costs, the 627 continuing programs will cost more than the 645 programs supported last year.

Distribution of training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Continuations:						
(a) Noncompeting.....	532	\$35,900,000	520	\$37,200,000	-12	+\$1,300,000
(b) Competing.....	85	5,500,000	105	7,500,000	+20	+2,000,000
2. Supplementals.....	(20)	585,000	(20)	585,000		
3. New programs.....	28	1,500,000	2	144,000	-26	-1,356,000
4. Scientific evaluation and planning.....	(4)	250,000	(4)	300,000	0	+50,000
5. Total training grants.....	645	43,735,000	627	45,729,000	-18	+1,994,000

Training grants (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Graduate.....	625	\$42,485,000	607	\$44,429,000	-18	+\$1,944,000
2. Clinical training, anesthesiology.....	20	1,000,000	20	1,000,000		0
3. Scientific evaluation and planning.....	(4)	250,000	(4)	300,000	0	+50,000
4. Total training grants.....	645	43,735,000	627	45,729,000	18	+1,994,000

Training grants program analysis

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Medical sciences.....	138	\$10,196,000	141	\$12,101,000	+3	+\$1,905,000
Biochemical sciences.....	168	11,046,000	163	11,071,000	-5	+25,000
Biological sciences.....	244	14,445,000	230	14,614,000	-14	+169,000
Biophysical sciences.....	75	6,798,000	73	6,643,000	-2	-155,000
Clinical training, anesthesiology.....	20	1,000,000	20	1,000,000		0
Subtotal.....	645	43,485,000	627	45,429,000	-18	+1,944,000
Scientific evaluation and planning.....	(4)	250,000	(4)	300,000	0	+50,000
Total training grants.....	645	43,735,000	627	45,729,000	-18	+1,994,000

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Collaborative research and development

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	2	18, 000	2	21, 000	-----	+ \$3, 000
Other expenses.....		3, 411, 000		3, 526, 000	-----	+115, 000
Total.....	2	3, 429, 000	2	3, 547, 000	-----	+118, 000

INTRODUCTION

This activity supports by contract research programs that are developmental and applied in nature. These research projects are carefully directed by Institute staff toward the mission of this Institute. The Institute performs a large portion of its research effort through unsolicited applications necessitating a carefully constructed contract program of research and development in order to provide sharp focus to areas of particular interest. Current programs supported by this activity include: (1) Automated Laboratory Medicine; (2) Pharmacology-Toxicology; (3) Genetic Chemistry; (4) Hospital Computer Project; and (5) Studies and Projects Conducted by the National Academy of Sciences.

Program plans in 1967 and 1968

Automated Laboratory Medicine.—This program is an attempt to provide the means whereby the most recent advances in medical laboratory science may be applied to the practice of preventive, diagnostic and therapeutic medicine as well as to the evaluation of individual and public health through the design and development of automated clinical laboratory equipment. The automated laboratory medicine program will be closely coordinated with the Pathology Department of the Clinical Center.

Increasing numbers of clinical laboratory procedures are considered necessary. Recent studies indicate that the number of tests performed in the hospital laboratory has increased 10-15 percent per year since 1955 and there is no indication of a leveling off of this trend in the foreseeable future. The Veterans Administration hospitals alone performed some 44 million tests in 1965.

In addition to the problem of handling the massive amount of data now obtained on each patient, other serious problems are created by the increasing number and complexity of tests. The solution to the clinical laboratory problem rests in: The automation of current laboratory procedures, development of new procedures which can be automated, invention of devices which can accept samples and produce finished results in a short time with high reliability, reproducibility and sensitivity, use of computer technology to control processing, recording of results and print-out of data. Other advantages to development of automation to its maximum extent would be: A reduction in the time elapsed from receipt of a sample to delivery of information to the physician from days or hours to minutes, rapid diagnosis by providing computer output of all tests performed on each patient on a single print-out sheet, identification of abnormal tests by computer program, and consecutive read-out of past tests, as a profile, to identify trends in patient response.

Although the largest portion of this program is supported by grants, two contracts totaling \$500,000 are being supported in the current year in this field. The 1968 estimate provides for continuing this program at the same level.

Pharmacology/Toxicology.—This program provides by contract support of collaborative studies designed to develop information in specific areas, such as: (1) Study of widely used sedatives which may interfere with the beneficial and occasionally life-saving action of other drugs frequently prescribed for the treatment of acute coronary thrombosis (heart attack); (2) Study of drugs given for the treatment of serious illness which may appear to have failed in certain patients not because of the inadequacy of the drug, but because of inability to achieve the necessary blood levels or concentrations in the average person; (3) Study of drugs which may at times have very serious adverse side effects. In 1967 this program is being supported at a level of \$900,000 and the 1968 estimate provides for an increase of \$100,000.

Genetic Chemistry.—The objectives of this program are to understand the functions of genetic material; to determine the specific sites in the molecule of

genetic activity; and to find appropriate ways of possibly altering genetic functions to correct defects producing disease states. In an attempt to solve this problem the Institute has contracts with the Oak Ridge National Laboratory for research on methods of separation, purification, and isolation of large quantities of pure RNA on pilot-plant scale and provision of these biomacromolecules so that chemical analyses and structure details may be determined. To date, this research has succeeded in devising novel separations technology for the isolation, in several-hundred milligram quantities, of a few kinds of pure s-RNA's.

This program is supported at a level of \$850,000 during 1967 and 1968.

Hospital Computer Project.—The Hospital Computer Project is being supported in 1967 and 1968 at \$700,000 by contract. This project involves the development of a computer-based hospital communication system to process patient care and clinical research data. Emphasis is on providing stable, reliable operation of the computer system in order to facilitate the collection of operating data. Additional programs will be put into service for: (1) the implementation of a hospital-wide system for reporting laboratory results, and (2) the utilization of a general information storage and retrieval system by the hospital's research community. This system is now permitting up to 64 users to use the computer simultaneously, and when completely operable, it is designed to permit 256 simultaneous users. Documentation of the complete operation required as a part of the contract will permit other hospitals to adapt the project's techniques to their needs.

The results of the program to date have been made available to such firms as General Electric, International Business Machines, and Western Union in the interest of expediting the technology transfer to industry of this extremely important aspect of the delivery of health service.

Studies and Projects Conducted by the National Academy of Sciences.—In 1967 an amount of \$443,000 is included in this activity and \$456,000 for 1968 for the support of several projects and studies by the National Academy of Sciences. Some of the major projects include: (1) Medical Indexing of Veteran Twins. The collection of the medical histories is approaching completion on 16,000 white, male veteran twins. This will provide a resource for medical investigators who have pertinent problems in the area of genetic influences on disease. This Institute is continuing to support this project during the current year to exploit this resource; (2) Evaluation of the NIGMS Training Grant Program; and (3) Evaluation of the Various Aspects of Postdoctoral Education in the United States. Preliminary work has begun on these two projects and it is expected that they will require two years to complete.

During the current year a study was completed on the possible connection between the anesthetic Halothane and a fatal liver disorder following anesthesia. Halothane was not found significantly associated with any single anesthesia practice. The detailed results of this study are being published in the literature.

In addition to the program expansion for contracts, there is an increase of \$5,000 to support full-time employment of two positions and related costs authorized in 1967.

Training activities

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	20	\$197,000	30	\$302,000	+10	+\$105,000
Other expenses.....		94,000		182,000		+88,000
Total.....	20	291,000	30	484,000	+10	+193,000

This intramural activity supports the training of young scientists as well as more mature investigators for both basic and applied research in pharmacology and related areas of biomedical sciences.

The requested program increase of \$177,000 provides support for ten additional associates, offset by a decrease of \$1,000 due to one day less pay in 1968.

At the time this program was established it was estimated that ten associates would be appointed in each of three years (1966-67-68) for a total of thirty scientists in training each year. The increase of 10 positions will permit expansion of this program to its planned level of 30 scientists in training in this field.

2002 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

There are also increases of \$17,000 for centrally furnished services from the "National Institutes of Health Management Fund."

Review and approval of grants

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	130	\$1,322,000	130	\$1,386,000	-----	+\$64,000
Other expenses.....		1,456,000		1,637,000	-----	+181,000
Total.....	130	2,778,000	130	3,023,000	-----	+245,000

This activity supports professional and supporting staff required for the direction, review, analysis and management of research grants, training grants and fellowships. This activity also includes support for the National Advisory General Medical Sciences Council.

The program increase of \$59,000 will provide for increased full-time employment to handle the increased numbers of applications reviewed and processed for an expanded grants program. Included in the net increase is \$6,000 for annualization of positions new in 1967, offset by a decrease of \$5,000 for one day less pay in 1968.

There are also increases of \$185,000 for centrally furnished services from the "National Institutes of Health Management Fund."

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	57	\$630,000	59	\$663,000	+2	+\$33,000
Other expenses.....		596,000		665,000	-----	+69,000
Total.....	57	1,226,000	59	1,328,000	+2	+102,000

This activity supports the Office of the Director, which plans, directs and coordinates the programs of the Institute, and the Program Analysis Branch which is the focal point for related data collection.

The program increase requested of \$78,000 will support two new positions necessary to cope with the increasing workload related to data collection and evaluation.

Included in the net increase is \$4,000 for annualization of positions new in 1967, offset by a decrease of \$3,000 resulting from one day less pay in 1968.

There are also increases of \$23,000 for centrally furnished services from the "National Institutes of Health Management Fund."

New positions requested, fiscal year 1968

	Grade	Annual salary
Program direction:		
Scientist.....	GS-15	\$17,550
Clerical assistant.....	GS-5	5,331
Total (2).....		22,881
Training activities: Commissioned officers (10).....		96,000
Total new positions, all activities (12).....		118,881

HISTORY OF INSTITUTE DEVELOPMENT

Senator HILL. All right, Dr. Stone, we are glad to welcome you back here, sir. We will be happy to have you proceed in your own way.

Dr. STONE. Mr. Chairman, and members of the committee, it is a privilege to appear before you in behalf of the National Institute of General Medical Sciences in connection with the appropriations for fiscal year 1968.

I welcome this opportunity to tell the committee something about the Institute, its development, major areas of emphasis, and its key activities in the form of a progress report.

It is, as you will recall, the General Institute.

Most of the National Institutes of Health categorical or, as they are sometimes called, disease-oriented, Institutes were established in the late 1940's or early 1950's.

It soon was evident, despite the need for a fundamental scientific underpinning for the more practical activities in each Institute, that a more general organization was needed to assure stable growth for a number of scientific areas such as biochemistry, pharmacology, genetics, and biophysics, which, though essential for growth in each of the categorical programs, being general in nature, could not be expected to flourish without some central point of scrutiny and support.

It was the need to provide such a central focus that resulted in the development of the National Institute of General Medical Sciences. It became apparent very early that some general clinical areas, again important to many of the categorical programs, that is, anesthesiology and surgery, could profitably be the responsibility of a central operation.

BASIC RESEARCH GRANTS

Basic information in these areas is essential to the categorical Institutes because, concentrating as they must on areas of the basic science directly related to specific diseases, they cannot provide the undifferentiated base for an as yet undiscernible application.

Grants to support this type of research were for the first 10 to 12 years of the modern development of the National Institutes of Health assigned to one of its administrative units, the Division of Research Grants, and, later, in 1958, to a new Division, the Division of General Medical Sciences, the forerunner of the present Institute.

HEALTH SCIENTISTS TRAINING

Early in the development of the latter Division it was assigned the responsibility for administering the bulk of the National Institutes of Health training supporting young health scientists working for advanced degrees. These programs result from the effective use of two administrative mechanisms: the training grant and the fellowship.

GRANTS AND FELLOWSHIPS

The training grant supports and enriches the research environment and introduces the beginning researcher to broad perspective of research under experienced and highly competent teachers. The fellowship, on the other hand, enables individuals of competence and potential, in whatever institution or locality, to advance in their scientific field.

In a more general view, as the concept of the Division of General Medical Sciences became established, it grew in both size and impor-

tance. Congress raised the Division to Institute status in 1962, and so, by law, stabilized a series of functions which had been shown to be essential in the administration of the broad programs of the National Institutes of Health.

BIOPHYSICS AND BIOMEDICAL ENGINEERING

The Institute has been alert to new scientific developments and has made necessary adjustments to provide adequate balance and coverage to a number of related fields of science, and has supported the development of new fields such as biophysics and biomedical engineering as the needs of these disciplines were perceived to be important.

BEHAVIORAL SCIENCES

An excellent current example is the Institutes' operation in its recent assessment of the need for an expanding rate for the behavioral sciences as an essential part of the developing biomedical sciences.

An assessment of the total behavioral science requirements for the National Institutes of Health has been completed and a determination of the specific role of this Institute in such a development is now in progress.

A more specific program development that can be noted, for purposes of clarifying the function of this Institute, is its current support of studies on the automation of clinical laboratories.

AUTOMATION

Senator HILL. Automation has made quite some progress here recently; hasn't it?

Dr. STONE. Yes, sir; it has.

Senator HILL. But there are no substitutes for the human brain.

Dr. STONE. No, but there are limitations in its ability to recall.

Senator HILL. That has been true from the beginning of time; hasn't it? That's why some folks kept a diary; isn't it?

Dr. STONE. Well, I don't know. It is the use to which they wanted to put the diary that was important.

Senator HILL. Go ahead, sir.

HOSPITAL LABORATORY TESTS

Dr. STONE. The number of tests performed in the average hospital laboratory has increased exponentially in the past few years.

Until recently, a fairly small number of routine tests were performed on blood and other body constituents. Now, however, dozens of tests using complicated techniques and highly specialized instruments are routinely carried out for diagnosing coronary heart disease, endocrine malfunction, and various metabolic disorders. Not only has the complexity of laboratory tests increased, but also the number of tests for each patient admitted to a hospital. Instead of an average of three or four tests a patient, batteries of tests are required.

PERSONNEL SHORTAGE

The situation has reached a critical point. Patients cannot always get, either in quantity or quality, the diagnostic tests they need. In

many hospitals, laboratory methods are crude, even antiquated. And there are by no means enough technicians and professional laboratory workers to cope with the vastly expanded workload.

AUTOMATION OF CLINICAL INFORMATION

In April 1966, the Institute of General Medical Sciences sponsored a conference of experts in clinical research, mass medical screening, automation, computer technology, and other fields related to the subject of automation of clinical information.

Following that meeting, the Institute took steps to increase the program it was already supporting in various aspects of clinical laboratory automation. Among those projects is the work of Dr. Donald Glaser, a Nobel Prize winner of the University of California at Berkeley, who is working on automated diagnostic procedures in bacteriology.

Using computers, these studies make possible rapid identification of bacteria in, for example, infected wounds, blood poisoning, and other conditions. Dr. George Brecher, of the University of California Medical School in San Francisco, is developing computer-controlled instruments and data collection systems for clinical chemistry and hematology.

GRANTS AND CONTRACTS

The Institute has several grants and contracts for projects in the development of automated analytical instruments that can perform multiple tests dependably, rapidly, and possibly more economically. These tools became even more effective when combined with computer systems for analyzing and reporting the results.

AUTOMATION OF MORE CHEMICALLY DEMANDING TESTS

Though automation can alleviate some of the tremendous workload in clinical laboratories, it cannot yet solve some of the problems caused by the large number of requests for sophisticated, special tests, developed at the research level which so far have not seemed adaptable to automation. The Institute is supporting research that ultimately could result in the automation of some of these more chemically demanding tests.

Senator HILL. Do you feel somewhat encouraged?

Dr. STONE. I feel very encouraged, sir, and I think that within a year we will have something to report to the committee that then will make the committee very happy for the support that they have given us over the past years.

We believe that there are some very significant automated procedures that are forthcoming.

DR. THOMAS D. KINNEY, CONSULTANT, CLINICAL LABORATORY AUTOMATION

As part of its program development in clinical laboratory automation, the Institute this past February named Dr. Thomas D. Kinney, who is chairman of the Department of Pathology at Duke University, principal consultant to assist in the development of this research support program. Dr. Kinney, who will spend a year with the Insti-

tute, was chairman of the conference held in April 1966 at which the problems in clinical laboratory automation were discussed and recommendations made for their solution.

BIOMEDICAL ENGINEERING

Among the emerging scientific disciplines supported by the Institute is biomedical engineering—a new area of science that brings together the physical sciences, represented by the engineer, and the medical sciences, represented by the physician, and draws upon the knowledge of both for support.

ELECTRONIC IMPLANTS

Electrical engineers working with physicians and scientists at Case Institute of Technology in Ohio are studying methods for restoring activities of muscles and nerves damaged by disease or accident by implanting in muscles and tissues electronic devices smaller than an aspirin tablet.

Dr. Wen H. Ko and his Case Institute associates are designing, developing, and perfecting these extremely small electronic implant systems in order to monitor heart beats, blood pressure, and body temperature in studies of disease.

Microelectronic devices that can automatically control and monitor the physiological activity of various parts of the body including heart, bladder, and nervous system have enormous potential for aiding the victims of stroke and other disabilities.

PARALYTICS REHABILITATION

Dr. Ko and the scientists at Case Institute have already stimulated repeated leg movement in rabbits, laboratory evidence of the possibility of a major advance toward ultimately rehabilitating paralytics through electronics.

Senator HILL. It is an interesting thing.

Dr. STONE. It is, sir, and it is a way in which our Institute supports the programs of the other institutes.

What I am saying is reminiscent of what Dr. Masland has said, and what others will say as we go along.

PHARMACOLOGY—TOXICOLOGY PROGRAM

The National Institute of General Medical Sciences also emphasizes its pharmacology-toxicology program, a coordinated national effort to study the effects of drugs on biological systems with the major objective the improvement of the efficacy of drugs and their safety.

In this program, the Institute employs all its research support mechanisms—grants for research projects, training and fellowships and contracts as well as special funds for center development—to study drug action at the cellular level, and, finally, the effect of drugs in human beings.

This program also embraces toxicology as well since information on the toxic effect of a drug used in the treatment of a disease may be

as important as the knowledge of its therapeutic effect. Drug safety is an essential and integral aspect of the entire program.

At the University of Iowa, where the Institute supports one of its three pharmacology-toxicology centers, scientists are attempting to refine their methods for evaluating drug toxicity by inducing what are called model disease states in laboratory animals; that is, diseases similar to those found in man that can be used in research with greatly improved specificity.

Senator HILL. This is a pretty good school out there, isn't it, Doctor?

Dr. STONE. Yes, sir; it is a very fine school.

RENAL AND NEUROGENIC DISEASES AND ENDOCRINE DISORDERS

So far, the scientists have induced renal disease, neurogenic disease, and endocrine disorders in several animal species. Eventually, they will be able to relate findings from these studies to similar drug studies in man. This work at Iowa is a significant example of how Institute-sponsored, pharmacology-toxicology research is moving in new directions.

ANESTHESIOLOGY PERSONNEL SHORTAGE

In 1965, Dr. Michael DeBakey, nationally known heart surgeon, Dr. E. M. Papper, one of the Nation's leading research scientists in anesthesiology, and other leading surgeons and anesthesiologists, met at a conference sponsored by this Institute in Philadelphia to discuss the manpower crisis in anesthesiology.

From that meeting emerged a vastly stepped-up Institute-supported program in anesthesiology, which, with Dr. Papper as principal consultant for 6 months, has grown steadily in scientific importance.

Testimony to this growth is reflected in the increase from \$1,334,000 for research grants and \$404,000 for research training grants in anesthesiology in 1966 to the estimated \$2 million for research grants and \$2,042,000 for research training grants to be awarded for that purpose in 1967, an overall increase of \$666,000 in research grants and \$1,638,000 in research training grants.

Senator HILL. How will the reduction of the budget for fiscal 1968 affect your program, Doctor?

Dr. STONE. It will constrict very markedly the training program, both in research training and in clinical training.

It will also restrict but to a somewhat lesser amount, the growth of the programs in the research project portion of the budget.

Because the metabolism and full range of action of anesthetics is not fully understood they are, perhaps, not always administered as effectively and safely as they should be. Such basic knowledge should be available to the anesthesiologists and to other physicians as well.

IMPROVED INSTRUMENTATION AND TRAINED MANPOWER

The development of improved instrumentation and of manpower trained in its use also is important to anesthesiology.

Today, three anesthetists often are required to attend a single patient during complex operations such as those required in open chest surgery. Scientists are working on the refinement of computers which continuously monitor physiological processes and advise of changes

in the state of the patient. Ultimately, some of these computers may help compensate for the critical shortage in certain categories of trained technical personnel.

Senator HILL. Just what do these computers do?

Dr. STONE. They monitor physiological parameters of the patient, and if the research is successful, they may predict that the patient is approaching a crisis before the human anesthesiologist would be aware of it, because of the ability—as I said, the memory of the computer is greater—and the ability to integrate.

HALOTHANE ANESTHETIC SAFETY STUDY

Another aspect of the Institute's program in anesthesiology was its support of a 3-year study of the safety of the anesthetic Halothane which had been linked with fatal liver damage.

The study showed Halothane to be as safe or safer than other general anesthetic agents on the basis of postoperative mortality. The study also established that the massive fatal liver damage following administration of Halothane or other anesthetics in surgery is rare and not significantly associated with any single anesthetic practice, as previously had been suspected.

SUPPORT OF RESIDENTS IN ANESTHESIOLOGY PROGRAM

In the past year the Institute inaugurated a new program for the support of residents in anesthesiology. The \$1 million appropriated by the Congress for this program will enable the Institute to make approximately 15 awards by the end of the fiscal year.

Senator HILL. How much did you ask for in this coming year?

Dr. STONE. \$1 million for this particular item.

Senator HILL. So there was no reduction here?

Dr. STONE. There was no reduction.

CENTERS FOR RESEARCH IN ANESTHESIOLOGY AND DIAGNOSTIC RADIOLOGY

Congress has also provided funds for the establishment of centers for research in anesthesiology and diagnostic radiology and several applications are now under review.

GENETICS

The anesthesiology program is one whose benefits to patients are obvious. The relation of genetics to disease may not be so obvious, but it is of utmost importance. Some 500 diseases and disabilities have been linked in genetic factors, an indication of the extensive role genetics plays in disease.

The entire field of genetics, from molecules to chromosomes to man and to whole populations is one of the most promising in the unending effort to improve man's health.

Understanding the mechanisms of hereditary disease requires knowledge of the detailed chemical architecture of all molecular components of the hereditary process, a field of scientific endeavor called "genetic chemistry."

COLLABORATIVE RESEARCH PROJECT WITH OAK RIDGE NATIONAL LABORATORY

To explain the chemical structure of genetic material, the Institute also has a collaborative research project with the Oak Ridge National Laboratory to study methods for separating protein molecules and for developing new methods of producing the biological materials needed for genetics research.

Scientists on this research project have devised novel techniques for isolating a few kinds of pure genetic materials, the so-called soluble RNA's, and have produced more pure material of this kind than ever has been produced before for research purposes.

Senator HILL. That work with the Oak Ridge Laboratory is interesting, isn't it, Doctor?

Dr. STONE. Yes, sir; because we are making use of the engineering ability up there for other purposes.

Genetic abnormalities are sometimes revealed by abnormal numbers of chromosomes in body cells——

Senator HILL. You switch it from destroying man to saving man?

Dr. STONE. Yes, sir; and this is one of the hopes for saving man in the coming generations.

COUNTING CHROMOSOMES

But the slow process of counting chromosomes has been a hindrance to genetics research.

The Institute supports a project that not only speeds chromosome counting but gathers and analyzes other data more rapidly.

Investigators on this project are developing a device that automatically scans photographs and, aided by a computer, analyzes quantitatively the information on the photograph. A special technique emphasizing the fine details will be used to obtain data from pictures of chromosomes, neurons, and other materials.

I might say, Mr. Chairman, that this is fundamental research, this what is called pattern recognition.

The development of a strong base in biomedical research requires ready availability of highly trained manpower to develop new techniques, to investigate new approaches, and to apply basic information to the study of disease. To this end, the Institute supports most of the Nation's training in the basic medical sciences.

CLINICAL GENETICS

Clinical genetics, a rapidly developing field, is so new that only 10 years ago, in 1956, were techniques developed which enabled scientists to determine accurately that 46 is the normal number of chromosomes in each cell in man. Some idea of the significance of this figure is illustrated by the fact that children suffering from Mongolism, or Down's syndrome, have 47 chromosomes instead of the normal 46. The relation of chromosomal abnormality to mental retardation has been definitely established and certain types of aberrant behavior have been linked to chromosomal abnormalities.

TRAINING PROGRAMS

The single most important element of any training program is the young man or woman who enters graduate school or medical school and works toward the doctoral degree.

The Institute now supports some 5,000 predoctoral students in training. The complexity of science and the new scientific areas developing so rapidly make it essential for most doctoral graduates, whether with an M.D. or a Ph. D., to take postdoctoral training for a year or more to develop scientific competence in greater depth. Even established scientists find that from time to time they must take additional intensive training in new techniques and in the use of new types of equipment.

The Institute, therefore, supports a large program in postdoctoral and special fellowships, the latter being awarded in the main to established scientists for special, advanced training.

Typical of such fellowship recipients supported by this Institute is a 27-year-old M.D. who received his bachelor of science degree from the Massachusetts Institute of Technology in 1961, and his M.D. degree in 1965 at the University of Pennsylvania.

As a research assistant under the joint auspices of MIT and Boston University Medical Center, he participated in applications of computer technology to the patient-care phase of hospital operation. He joined the Massachusetts General Hospital staff to work on the development of a comprehensive hospital information system under a grant with this Institute.

TRAINING GRANTS IN POSTDOCTORAL AREA

We support a small but growing program in training grants in the postdoctoral area involving the clinical sciences of anesthesiology, surgery, and diagnostic radiology along with clinical pharmacology and biomedical engineering. Here most of the fellows in training enter the program with the M.D. degree and spend their 3 to 5 postdoctoral years in obtaining a high competence in one of the basic sciences directly related to their research efforts—in special programs designed to improve clinical care through the application of new techniques developed from basic medical research.

I would like to recall with some embarrassment that I answered 48 when you asked the group some years ago if anyone would know how many chromosomes there were in man. One of my junior people had me correct that.

Senator HILL. If you don't make a bigger mistake than that, you will be all right, especially in this field where there is so much we don't know.

DIFFICULTY OF GETTING TRAINEES

Do you have much trouble getting these trainees?

Dr. STONE. At the advanced level, getting young men and women to enter into these areas is very difficult indeed. This is particularly true in biomedical engineering where as yet the medical schools and engineering schools have not developed an environment for this new kind of person.

There are practically no departments of biomedical engineering in medical schools. There is no promotion ladder to go up. There are only three professors of biomedical science.

The problem is putting together two bodies of sciences which have been compartmented for years. It is difficult.

As an example, the three broad scientific areas of pharmacology and toxicology, genetics, and anesthesiology, among many supported by the National Institute of General Medical Sciences, are committed to improving the Nation's health.

PHARMACOLOGY-TOXICOLOGY

The pharmacology-toxicology research supported by this Institute demonstrates how an organized program is beginning to blend equipment, facilities, and the Nation's pharmacological and pharmaceutical talent in an effort to improve the safety and efficacy of drugs.

Anesthesiology touches the lives of millions of Americans—in surgery, treatment of accident victims, in respiratory problems and countless other situations.

The Institute-supported programs in genetics which I have just touched upon, emphasize scientific fundamentals which can be applied to specific diseases and handicaps.

BUDGET REQUEST BREAKDOWN

Mr. Chairman, the appropriation request for the National Institute of General Medical Sciences for 1968 totals \$160,284,000. This is an increase of \$14,253,000 over the comparable figure for 1967.

Of the total amount requested, \$85,263,000 is for research grants; \$20,910,000 for fellowships; \$45,729,000 for training activities; \$3,547,000 for collaborative research and development; \$484,000 for the training activities; \$3,023,000 for review and approval; and \$1,328,000 for program direction.

I shall be very happy to answer any questions.

BACKLOG OF APPROVED RESEARCH APPLICATIONS

Senator HILL. What balances or deficiencies do you expect to have at the end of this fiscal year in your research training program?

Dr. STONE. We have a backlog of approved research grant applications that we cannot fund of about \$17,690,000.

Senator HILL. How many, do you say?

Dr. STONE. \$17,690,000 of scientifically approved but unfunded applications.

We have in fellowships, which is part of the training picture, \$7 million of scientifically approved and reviewed applications we cannot pay.

In training grants, we have \$7,305,000 worth of applications. I wish to emphasize, sir, that these are all approved, both by technical scientific committee and by the Council.

This comes to a total of \$31,995,000.

Senator HILL. That is quite a backlog, isn't it, Doctor?

Dr. STONE. Yes, sir.

Senator HILL. In your request, you did not take care of all of this much, did you?

Dr. STONE. No, sir; we did not.

Senator HILL. Why not?

Dr. STONE. The request—

Senator HILL. Were you cautioned not to ask for too much?

Dr. STONE. Well, my memory, I would say, is modestly blank as to what the precautions may or may not have been.

Senator HILL. Off the record.

(Discussion off the record.)

Senator HILL. That certainly is quite a backlog.

Dr. STONE. It amounts to about one-fifth of the total appropriation requested by the President in research grants.

It is about a third of the total fellowship program, and it is about one-sixth then of the training grant program. These are sums over and above our capacity to pay.

FUNDING OF NEW TRAINING PROGRAMS AND GRANTS

Senator HILL. As I examine your budget for the coming fiscal year, Doctor, the budget request only makes allowance for funding two new training programs next year in a total of over 600 training grants. Is that correct?

Dr. STONE. That is correct.

Senator HILL. What areas are most seriously affected?

Dr. STONE. Biomedical engineering, genetics, and the clinical sciences, including anesthesiology, will be most seriously affected.

This is an overall contraction, even though the absolute sums are slightly larger than fiscal year 1967. We will support 18 fewer programs, and we are saving money to support a very few, something like two or four, new applications. But we do so at the expense of the ongoing.

Senator HILL. You have to start these new ones at the expense of the ongoing programs.

Dr. STONE. Yes, sir.

Senator HILL. What areas will be most seriously affected by this?

Dr. STONE. Well, we will be able to support fewer trainees, and this is the product that a training program serves. Of the young men and women coming off, there will be fewer supported by some 400 than were supported last year.

The genetics field must contract somewhat. The anesthesiology field and other clinical areas that have been provided support in the past must contract.

The biophysics and biomedical engineering field must contract under this situation, because essentially the program is in status quo with a slight downward dip, both in numbers of programs and in numbers of people trained.

ORIGINAL NIH REQUEST FOR TRAINING

Senator HILL. What was your original request for training?

Dr. STONE. The NIH original request was \$49,372,000.

Senator HILL. I notice you said the NIH.

Dr. STONE. That is what I see here in this column.

Senator HILL. I see.

You didn't say what the request of the General Medical Sciences Institute was.

Dr. STONE. No, sir; I did not.

FUNDS ADDED IN 1967 FOR CLINICAL TRAINING OF ANESTHESIOLOGY

Senator HILL. Was it substantially higher? As I recall, we added some funds—we added some funds for clinical training of anesthesiology last year, did we not?

Dr. STONE. Yes, sir; you added \$1 million. The committee met a week ago today, and approved about 40 grants which will train between 60 and 65 clinicians, and that is not a large number—although it might appear to be a large number. But I think we are quite fortunate to find that a number of general practitioners wish to have certain speciality training, and the years of experience in successfully handling patients make this very rapid turnover in a very highly trained specialist who is so badly needed in the hospitals and in the development of regional programs and other national health services oriented programs. The same amount is requested in 1968.

Senator HILL. No increase?

Dr. STONE. No increase.

PHARMACOLOGY-TOXICOLOGY PROGRAM

Senator HILL. Now in your pharmacology-toxicology program, is there any special impediments in bringing these centers into operation?

Dr. STONE. I reported to you last year, sir, the facts as I knew them, and I believe I indicated the program was going well.

I have to report with a certain amount of sadness this year that the program is not going along as well as we had hoped.

Senator HILL. What is the trouble?

LACK OF PHYSICAL SPACE

Dr. STONE. The trouble is not in the need of trained men. It lies in the inability of institutions to provide the additional space.

Senator HILL. Physical space?

Dr. STONE. Physical space. This program, if I may state my opinion, sir, this program without the ability in one way or another to provide the physical space, will not be as successful as Dr. Shannon has predicted it might be, or as I know this committee hoped it would be.

These programs do not have space available in the institutions because of the scope and size of the program and the fact that they—it is the understanding of everyone participating in it—will constitute a national resource, and they have nationally assigned goals.

Senator HILL. You know, of course, better than I do, that the budget last year and this year slashed quite a bit of the authorized funds for physical research facilities?

Dr. STONE. Yes, sir; I administered that program, and I know it very well.

Senator HILL. There was a slash made last year and this year, is that correct?

Dr. STONE. That is correct.

Senator HILL. But if you don't have the physical facilities you cannot carry on this work.

Dr. STONE. Physical facilities are the key to advanced research in this country.

Senator HILL. They are absolutely essential.

Dr. STONE. Research is no longer done in a garage.

Senator HILL. Or in the snow or the rain. Is that right, Doctor?

Dr. STONE. Yes, sir.

Senator HILL. Is there anything else you would like to add?

Dr. STONE. I want to thank you for the privilege once again for testifying.

Senator HILL. You certainly lived up to your reputation. You have made a fine statement here today.

Dr. Shannon, is there anything you would like to add?

Dr. SHANNON. No, sir.

Senator HILL. We thank you, Doctor, you brought us a fine statement. Thank you very, very much.

Off the record.

(Discussion off the record.)

NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT

STATEMENT OF DR. GERALD D. LA VECK, DIRECTOR, ACCOMPANIED BY GERALD S. ATCHISON, BUDGET OFFICER; DR. JAMES A. SHANNON, DIRECTOR; RICHARD L. SEGGER, EXECUTIVE OFFICER; AND LELAND B. MAY, ACTING FINANCIAL MANAGEMENT OFFICER, NATIONAL INSTITUTES OF HEALTH; CALVIN V. BALDWIN, JR., EXECUTIVE OFFICER, NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT; AND DR. LEO J. GEHRIG, DEPUTY SURGEON GENERAL; CHARLES MILLER, CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT

For expenses, not otherwise provided for, necessary to carry out the purposes of the Act with respect to child health and human development, **[\$64,922,000]** \$68,621,000.

Amounts available for obligation

	1967	1968
Appropriation.....	\$64,922,000	\$68,621,000
Comparative transfers within NIH.....	+2,131,000	-----
Total.....	67,053,000	68,621,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants:						
Research.....		\$40,593,000		\$42,931,000		+\$2,338,000
General research support grants.....		(3,807,000)		(4,395,000)		+(588,000)
Scientific evaluation.....		(100,000)		(100,000)		0
Categorical clinical research centers.....		(500,000)		(500,000)		0
Fellowships.....		3,800,000		4,102,000		+302,000
Training.....		9,619,000		9,762,000		+143,000
Direct operations:						
Laboratory and clinical research.....	200	5,257,000	261	5,742,000	+61	+485,000
Collaborative research and development.....	46	1,377,000	46	1,387,000	-----	+10,000
Biometry, epidemiology, and field studies.....	51	1,921,000	51	1,939,000	-----	+18,000
Training activities.....	5	90,000	5	91,000	-----	+1,000
Review and approval of grants.....	83	1,690,000	84	1,786,000	+1	+96,000
Program direction.....	45	814,000	46	881,000	+1	+67,000
Total obligations.....	430	65,161,000	493	68,621,000	+63	+3,460,000
Unobligated balance, reserve.....		1,892,000		-----		-1,892,000
Total obligations and balance.....	430	67,053,000	493	68,621,000	+63	+1,568,000

2016 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	430	493	+63
Full-time equivalent of other positions.....	13	13	-----
Average number of all employees.....	377	419	+42
Personnel compensation:			
Permanent positions.....	\$3,097,000	\$3,467,000	+\$370,000
Positions other than permanent.....	102,000	102,000	-----
Other personnel compensation.....	85,000	85,000	-----
Total personnel compensation.....	3,284,000	3,654,000	+370,000
Personnel benefits.....	343,000	387,000	+44,000
Travel and transportation of persons.....	273,000	301,000	+28,000
Transportation of things.....	47,000	51,000	+4,000
Rent, communications, and utilities.....	142,000	156,000	+14,000
Printing and reproduction.....	43,000	47,000	+4,000
Other services.....	643,000	708,000	+65,000
Project contracts.....	2,799,000	2,957,000	+158,000
Payment to "National Institutes of Health management fund".....	2,485,000	2,777,000	+292,000
Supplies and materials.....	225,000	249,000	+24,000
Equipment.....	865,000	539,000	-326,000
Grants, subsidies, and contributions.....	54,012,000	56,795,000	+2,783,000
Total obligations by object.....	65,161,000	68,621,000	+3,460,000

Summary of changes

1967 enacted appropriation.....	\$64,922,000
Unobligated balance, reserve.....	-1,892,000
Comparative transfers within NIH.....	+2,131,000
1967 total estimated obligations.....	65,161,000
1968 estimated obligations.....	68,621,000
Total change.....	+3,460,000

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 2017

	Base		Changes to base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built-in:				
Annualization of positions new in 1967.....				\$47,000
Total, built-in increases.....				47,000
B. Program:				
1. Research grants:				
(a) Regular programs.....		36,186,000		1,750,000
(b) General research support grants.....		3,807,000		588,000
Subtotal, research grants.....		39,993,000		2,338,000
2. Fellowships.....		3,800,000		302,000
3. Training grants.....		9,619,000		143,000
4. Laboratory and clinical research.....	200	3,804,000	61	739,000
5. Collaborative research and development.....	46	1,315,000		7,000
6. Biometry, epidemiology and field studies.....	51	1,852,000		15,000
7. Training activities.....	5	83,000		1,000
8. Review and approval.....	83	1,056,000	1	44,000
9. Program direction.....	45	554,000	1	50,000
10. Centrally furnished services from the National Institutes of Health management fund:				
(a) Research supporting services.....		793,000		56,000
(b) Clinical supporting services.....		359,000		46,000
(c) Administrative management.....		53,000		134,000
(d) Review and approval.....		521,000		43,000
(e) Program direction.....		199,000		13,000
Subtotal, management fund.....		2,485,000		292,000
Total, program increase.....			63	3,931,000
Total increases.....			63	3,978,000
DECREASES				
1. 1 day less pay in 1968.....				-18,000
2. Nonrecurring equipment costs in 1967.....				-500,000
Total decreases.....				-518,000
Net change requested.....			63	3,460,000

EXPLANATION OF CHANGES

1. Grants

(a) *Research*.—Approximately 1,143 grants will be supported in 1968 as compared to 1,087 in 1967 and 1,065 in 1966. In addition, funds are provided for general research support grants and clinical research centers.

(b) *Fellowships*.—Approximately 206 postdoctoral and special fellowships will be supported in 1968 as compared to 190 in 1967 and 138 in 1966. Also some 104 career awards and career development fellowships will be supported in 1968 and compared to 97 in 1967 and 78 in 1966.

(c) *Training*.—Approximately 143 training grants will be supported in 1968 as compared to 141 in 1967 and 128 in 1966.

2. Direct operations

(a) *Laboratory and clinical research*.—13 positions and \$157,000 will be used in the Reproduction Program for research in reproductive endocrinology, steroid metabolism, perinatal physiology, related laboratory research in human reproduction, 12 positions and \$145,000 will be used in the Growth and Development Program for research into cell growth and function at all levels and research into the biological bases of behavior, 30 positions and \$363,000 will be used in the Aging Program for the second of three phases of the gradual build-up of the research staff to house the new Gerontology Building in Baltimore, 6 positions and \$74,000 will be used in the Mental Retardation Program for research into the correlates of brain metabolism and psycho-social ecology and cultural anthropology.

(b) *Collaborative research and development*.—\$7,000 will be used for scientific information centers in aging, growth and development, and reproductive biology.

(c) *Biometry, epidemiology, and field studies*.—\$15,000 will be used to

strengthen the Institute program to develop descriptive and analytical epidemiologic studies to determine the extent of various problems of interest to the NICHD.

(d) *Training activities.*—\$1,000 will be used to strengthen the Institute Career Development Program.

(e) *Review and approval.*—1 position and \$44,000 will be used to provide the increased grants management commensurate with the overall Institute growth.

(f) *Program direction.*—1 position and \$50,000 will be used to provide the increased administrative staff necessary to meet the larger demands of the growing Institute.

Research grants

	1967 estimate	1968 estimate	Increase or decrease
Research projects.....	\$36,186,000	\$37,936,000	+\$1,750,000
Special programs.....	4,407,000	4,995,000	588,000
Total, research grants.....	40,593,000	42,931,000	2,338,000

INTRODUCTION

This activity supports regular research grant projects in reproduction, growth and development, aging, and mental retardation. In addition, funds are provided for general research support grants, scientific evaluation grants and clinical research center grants. The regular research grants program reflects an increase of \$1,750,000 in 1968 over 1967, which includes \$1,229,000 to support an additional 47 noncompeting continuations and to support an additional 9 competing projects.

The budget for 1967 and 1968 reflects the application of the newly authorized cost sharing arrangements to competing research grant projects (new and renewal). This cost sharing plan considers the full indirect cost of the research project in arriving at the Federal and nonfederal share. For continuation of previously approved projects the earlier limitation of 20 percent or less for indirect costs is applied with an assurance of some sponsor cost participation.

In addition, an increase of \$588,000 for General Research Support Grants represents the Institute's proportionate share of the proposed National Institutes of Health increase in this area.

PROGRAM PLANS FOR 1967 AND 1968

Research in family planning, \$357,000

The Institute's interest in this field falls into three research areas: reproductive biology, the psychological and social aspects of family planning and contraceptive methods.

Most of the grants in this field now support reproductive biology research, which is aimed at elucidating the biological processes of reproduction which may have relevance to fertility regulation. Research grants are used to support projects designed to study the development of germ cells in the male and female, the endocrinological aspects of reproduction, the processes of fertilization, oviduct transport and implantation in the uterus. The Institute shall continue to support such investigations, in both humans and experimental animals, with the expectation that these studies will yield worthwhile information leading to the development of better and safer family planning techniques.

The recent introduction of new methods of fertility control has created rapidly changing patterns of American family planning practices.

The Institute is interested in developing and supporting research which will lead to the development of contraceptive methods acceptable to a variety of population groups. The ideal contraceptive is effective, simple, safe, inexpensive, and acceptable; it is unlikely that any single method will fit all these criteria. Therefore, it is our goal to support a variety of research projects which will lead to the development of a number of effective methods.

The Institute is concerned with the immediate and long-term effects of fertility regulation. In particular, recent clinical reports and a wealth of animal research findings led to careful examination of several problems possibly related to the use of oral contraceptives. These include thromboembolic disease, endocrinolog-

ical and metabolic defects, cancer, and the effects on children born to women using such contraceptives. Scientists have no reason to believe that these problems are interrelated and the research methods applied to finding solutions to them certainly will vary. Accordingly, some of the questions raised on oral contraceptives will be answered by large long-term studies and others by smaller projects designed to answer more restricted questions.

The importance of the problems relating to oral contraceptives is modified by the fact that the technology of such contraception is changing rapidly. This changing technology does not substantially mitigate the need for surveillance studies; rather, it calls for a flexibility in their design which will allow for adjustments to changing contraceptive methods and newly recognized problems.

The Institute is vitally concerned with learning more about intrauterine contraceptive devices which are growing rapidly in use, both in the United States and overseas. These devices have proven to be remarkably effective; they are unique in that only one decision for contraception need be made. Despite the fact that there are few, if any, cases reported of death from their use, they are not innocuous: women bleed and have cramps, the devices are ejected, and unwanted pregnancies occur. Beyond this, the long-term effects have not been adequately tested. The Institute will play an increasingly important role in evaluating their safety and effectiveness.

Research in infant mortality, \$373,000

The death of an infant before his first birthday is a source of increasing concern in the United States. During this first year of life, the risk of dying is greater than during any other year until after age 65. In 1964, 99,783 infants died before reaching their first birthday; 72,026 of these deaths took place during the first four weeks of life, with 41,840 infants dying within the first 24 hours. While infants with birth weights of 2,500 grams or less constitute about eight percent of total live births each year, an estimated 50 to 60 percent of all neonatal deaths are of infants within this particular weight group.

Striking similarities exist between late fetal and early neonatal deaths, indicating that many of the causative factors for these perinatal deaths are part of the continuum of fetal life and are, for the most part, pregnancy related. In addition to deaths of live infants, registered fetal deaths in 1964 totaled 94,467 with 65,931 being of 20 weeks or more gestation. In considering the magnitude of the perinatal mortality problem, it must be remembered that in addition to the reported 28,536 early fetal deaths, there is a large unknown component consisting of early spontaneous as well as criminal abortions and unregistered stillbirths.

Since the majority of neonatal deaths are pregnancy related, this Institute will emphasize the identification of these pathophysiologic factors which determine a high-risk pregnancy or subject the fetus to jeopardy. Documentation of normal physiological, biochemical, or immunological processes as well as those deviations from normal development which fall outside the margins of safety for either the maternal or fetal organism are planned. Once identified, refined biomedical techniques can be applied to isolate aberrant mechanisms which contribute to fetal wastage and prematurity.

Until recently, babies weighing $5\frac{1}{2}$ pounds or less at birth were considered, by definition, to be premature infants. It is now realized that these babies differ in degree of maturity achieved. Some are of shortened gestation, while others suffer from intrauterine growth retardation. These latter are the "small-for-dates" babies, while the former are prematurely born infants.

The Institute plans a multifaceted approach to the problems of these babies. The interaction of the maternal-placental-fetal complex as related to fetal growth and development will be explored. Particular attention is to be directed to the identification of reliable indices of the process of fetal maturation so that the prematurely born infant might be distinguished from the equally small full-term baby. Such knowledge is essential since physiological handicaps and subsequent health problems of these two groups of babies may be quite different and could influence their chances for survival.

About two-thirds of all low birth weight infants are prematurely born or of shortened gestation. Factors responsible for early termination of a pregnancy are still largely unknown; it is recognized, however, that a better understanding of the entire process of childbirth is crucial to preventing premature labor as well as to initiating labor in pregnancies that are overdue.

While many theories have been proposed to explain the phenomenon of labor, it is still not clearly understood why it begins. It appears likely, however, that

the onset of labor is not due to a single cause, but to a number of factors which play some part in the specialized pattern of uterine contractions characteristic of labor. Currently, the Institute is supporting a number of research grants concerned with unraveling the unknowns of this process. Researchers are studying the physiology of uterine muscle, the effects of uterine contractions on the human fetus and the particular contributions and interrelationships of the hypothalamus, the central nervous system, the placenta, the fetus, and specific hormones in the initiation of labor.

Another important area of investigation concerning infant mortality is the one seeking clues to the causes of sudden death in infants. Each year approximately 10,000 to 20,000 infants in the United States die suddenly for no apparent reason. A leading cause of death in children under one year of age, this mysterious killer, also called "crib death," strikes apparently healthy, well-nourished infants, often with no previous record of illness. Doctors don't understand it, and until now they had little but their own experience to draw upon for the answers.

The Institute has recently published the first book-length treatment of this subject, based on an interdisciplinary conference where the leading investigators and authorities on "crib deaths" pooled their knowledge and ideas for the first time. *Sudden Death in Infants* is the first definitive work in this area and promises to be the springboard for expanding research and cooperation among scientists.

An Institute-supported epidemiologic study of all sudden, unexplained deaths among infants in an entire county on the West Coast, revealed that of 155 sudden, unexpected infant deaths examined to date, 115 have remained unexplained. All of these 115 deaths occurred during the sleep period. This study has shown that the peak incidence of sudden infant deaths is in the two- to four-months age group. The mysterious syndrome spares very young infants and is rare after six months of age.

Investigations emphasizing other approaches to this problem are also being supported. These include identifying the mechanisms of sudden death, investigating the etiology of an allergic response, and determining the role of respiratory viruses in the occurrence of the syndrome. We will continue to support such research with the goal of solving the mystery of sudden unexpected death.

To date, the biological aspects of the perinatal and infant mortality problem have been emphasized; more needs to be done with the behavioral components of pregnancy maintenance and management, fetal survival, and infant well being. Research plans for 1967 and 1968 include increased emphasis on behavioral science studies in infant mortality as well as identification of interrelationships between biological and behavioral factors in this area.

Research in growth and development, \$526,000

The study of growth and development involves a multidisciplinary approach encompassing biological and behavioral sciences collaborating to understand the normal processes within individuals as they develop from birth to maturity. The impact of childhood diseases and of genetic, nutritional, or environmental (physical and emotional) abnormalities on growth and development is also emphasized. Among the many disciplines involved are those concerned with physiology in the broadest sense, intellect, learning, behavior and social influences. Research on the processes involved as the individual changes from a completely dependent infant to a mature, self-directing and productive member of society, has as its ultimate goal the knowledge needed for the achievement of optimal development which will result in improvement of quality of human existence during the growth period as well as in the subsequent years of maturity.

A better understanding will be sought of the human organism in terms of the physiological development of the species, the individual, and the components of the individual. Research efforts will deal with the biological processes and mechanisms which contribute to the uniqueness of the individual in order to learn more about the complex interrelationships between the fluctuating physical environment and the physiological function and growth of developing individuals who differ in race, residence, socioeconomic status, and other factors. A dynamic program will be established to delineate the research problems relating to the nature, establishment and development of physiological rhythms in the human organism. Additionally, the Growth and Development Program plans to develop research projects in other promising areas in order to:

- (1) Further our understanding of nutrient interactions and patterns of nutrient intake which result in optimal body development and composition, Relationships between nutritional intake, growth patterns, and intellectual develop-

ment will be established through studies involving alterations in nutrient intake. To facilitate these goals, the preparation and publication of a "Guide to Nutrition Terminology" suitable for classifying, storing, and retrieving nutrition information with adaptation to National Library of Medicine and other library needs will be completed by 1970.

(2) Gain a better understanding of the relationships between physiological and behavioral processes through interdisciplinary research utilizing behavioral biology. Efforts will be made through this interface between biology and behavior to identify and assess the basic biological mechanisms contributing to the development of intellectual potential and emotional control as they are affected by hereditary and environmental influences. A primary goal will be development of methodologies for assessing deficits in brain function or central nervous system damage in children who are raised during their critical periods of development in impoverished environments.

(3) Broaden our descriptive knowledge and refine our theoretical understanding of psychological development and learning, including the intellectual, social, and emotional aspects. Research efforts will span the entire length of childhood from early infancy through late adolescence and across many population groupings defined by such characteristics as sex and sociocultural status. An early goal will be a critical review of information pertaining to moral development, conduct of a conference on this subject, and possible publication of a reference volume, in collaboration with other interested groups at the National Institutes of Health. By 1973 we will have developed methodologies, broadened descriptive knowledge, and refined our understanding of underlying mechanisms with regard to the following: the influence of parent-child interaction on child development and on parental attitudes; the role of early stimulation and deprivation in learning and cognitive development; conditions which promote creative, constructive, and adaptive aspects of personality development; interrelationships between cognitive elements and other aspects of personality development; and the development of impulse control. Major attention will also be given to developing theoretical and methodological approaches to the study of learning in children as a complex, interdisciplinary development process.

Research in adult development and aging, \$187,000

Research in this area is directed towards the enhancement of physical and mental health during the entire period of adult life. There are now approximately 19 million Americans over the age of 65 years. They constitute about 10 percent of the population. Thus a large segment of the population is living in a phase of life that presents serious problems with regard to health and psychological and social adjustment. Great emphasis is thus placed on the development of knowledge about medical, psychological, and social problems of the elderly. However, emphasis is also placed on the development of information about the problems of the young and middle-aged adult because of the intrinsic importance of studies that deal with that portion of the lifespan and because the physical and mental health of the elderly person is based on his health as a young and middle-aged person.

Throughout the adult years, progressive decreases occur in the efficacy of many functions from the cellular level to the level of the whole animal. These changes have a great effect on health in the positive sense of vigorous functional ability as distinguished from the simple absence of diseases and on the excellence with which a large number of physical and mental activities can be performed. They also have a heavy impact on the ability of the individual to withstand disease. This is shown by the dramatic increase in mortality rates from a very wide variety of causes with increasing age. For an understanding of the impact of disease on the elderly there must be studies not only of disease processes but also of the functional abilities of the elderly persons in whom those disease processes occur.

The early life of the individual has great effect on his later life in ways that are just beginning to be appreciated. For example, undernutrition of the young rat may double his lifespan. In the coming year the effect of such early environmental factors, the processes through which they operate, and the ways in which they can be favorably modified will be studied.

It is known that there are striking changes in the overall functional capacity of the body with increasing age. The decline in the ability to exercise vigorously is a good example of this. In addition there are less obvious changes that occur in the functional capacity of the individual organs with age. The rates at which these changes occur vary greatly from organ system to organ system and from

individual to individual. There are also marked changes in the ability of the body to carry out biochemical operations with increasing age. One example of this is the change in the metabolism of fat that is reflected in the increase in the concentration of fatty materials such as cholesterol in the blood with increasing age. Another is the impairment of the body's ability to utilize sugar and other carbohydrates with increasing age. Such changes in bodily function will be studied in individuals of different ages to determine the rates at which the changes occur, the mechanisms involved, and the factors that influence the changes. Studies are of great importance from the standpoint of determining what the range of normal function is at each age, what is normal and harmless, what is disease and should be treated, what the functional weaknesses are that occur with increasing age, and what can be done to compensate for them. Such studies will have important implications with regard to the effect of various factors such as diet and exercise on health and well-being.

It is becoming increasingly clear that individuals have different hereditary endowments, and that these are reflected in their physical characteristics. These characteristics are in turn modified by dietary and other practices of the individual, and by the environmental factors, toxic and otherwise, that act upon the individual. The progression of changes in physical characteristics may lead to disease processes. The developing changes can in some instances be recognized years before they lead to overt illness. Careful long-term studies of human populations should lead to a recognition of the significance of various types of bodily characteristics and changes. This in turn will make it possible to recognize the characteristics of a person that place him in a high-risk category with respect to certain diseases. This information will be of great value in undertaking certain types of preventive care.

A great deal of research remains to be done on the biological changes that are responsible for the aging processes we recognize. Fundamentally very little is known in this area. It is clear that there is death of cells with increasing age and thus a progressive decrease in the number of cells in the various tissues and organs with increasing age. There is little change demonstrable in the structure of the remaining cells even with procedures as powerful as electron microscopy although the accumulation of insoluble materials in certain cells has been demonstrated. There are various suggestions of diminution and abnormality of function in the surviving cells of the elderly animal, but information in this area is fragmentary. Studies on the changes in cellular structure and function that occur with increasing age are underway and will continue in an effort to solve the great mystery of aging and to make possible a more rational medical response to its manifestations.

As individuals pass through life there are, in addition to biological changes, profound psychological changes. These include alterations in sensory ability, learning ability, intellectual creativity, and many other functions. Each decade of life is different and has its own potentialities and responsibilities. Careful studies of the psychological determinants of life are necessary in order that each individual may lead the most satisfying and useful life that is possible for him.

In addition what society expects of a person changes with that person's age. In particular we are moving into an era in which a large fraction of the lifespan may be spent in retirement. Thorough psychological and social studies are necessary to provide the information that will make it possible for society to make this a period of self-fulfillment rather than one of frustration. A program of such studies is now under development and will be expanded in the coming year.

Research in mental retardation, \$307,000

Estimates place the number of retarded individuals in our nation today at approximately 5½ million. About 90 percent of these retardates are only mildly disabled, and in many instances can achieve partial or total economic support. They are heavily concentrated among families with poor education and low incomes. For many of the retarded population it is not yet possible to determine a specific diagnosis. The majority of retardates have no demonstrable structural brain abnormality, at least insofar as we can tell by our present instruments of measurement. Some of the problems are psychosocial in character and are often aggravated by cultural and environmental deprivation. Since psychosocially abetted retardation contributes to the self-perpetuating nature of the disadvantaged groups in our society, it is extremely important that ways be found to combat it.

We need to know much more about basic processes of motivation, perception, learning, and cognitive processes in the mentally retarded of all ages. We need

a better appreciation of what could be accomplished through early stimulation and careful training of children who show signs of being retarded.

In 1967 and 1968, the Institute's extramural program will continue research in the behavioral aspects of mental retardation. One large research project is investigating the development of language and cognition in culturally and environmentally deprived children. Considerable progress is being made in this area by teaching preschool children to think with language symbols. Researchers are using two main methods to improve the intellectually retarded child's language skills: a phonetic alphabet system with 64 letters, each representing a single speech sound, called an Initial Teaching Alphabet; and a language development kit, a program to 200 prepared language lessons including specific language plans for each day with stimulation being supplied by the use of tape recorders, puppets, and other interesting materials.

Because the teachers' attitudes and abilities are so important in reaching deprived children, another research team is also investigating the effectiveness of teachers and educational methods on retarded children. Researchers are studying parent-child interactions in preschool training.

From preliminary results already obtained, the researchers are confident that parent-child teaching and training, such as that demonstrated in their program, may be one answer to breaking the self-perpetuating cycle of cultural deprivation.

These studies provide leads indicating that mild retardation and subnormal intellectual functioning due to cultural and environmental deprivations does not have to be self-perpetuating. Program plans for 1968 include expanded research on such aspects as preschool enrichment and remedial instruction; education and parent-child interaction; the development of instruments and devices for evaluating learning capacities and behavior. Additional research is planned to identify means of improving public and professional attitudes through assessment of public attitudes and their impact on the retarded person's self-image and adjustment, access to social and vocational opportunities, family strategies, and mechanisms developed by retardates to cope with problems and stress situations.

In attempting to understand the biological causes of mental retardation, the Institute is supporting a comprehensive grant program in molecular biology, especially in genetics. Chromosomes are the structures in the nucleus of the cell which carry the genes. Gross abnormalities of chromosomes have been shown to be related to spontaneous abortions and birth defects, including mental retardation.

With regard to Down's syndrome (mongolism), for example, it was discovered that mongoloids have 47 chromosomes instead of 46, the normal number. The discovery raises further questions concerning the incidence and causes of this condition. Expanded research is underway to follow up this lead.

Beginning in 1963-64, researchers have surveyed 7,000 newborns in Denver, Colorado. They found that babies with abnormal numbers of sex chromosomes tended to appear in seasonal clusters, during a five-month spring and summer period. These findings were substantiated in a more recent survey. There was also a rise in the incidence of Down's syndrome during this same five-month period. These findings suggest that sex chromosomes and the autosomal chromosome involved in Down's syndrome may be equally susceptible to production of abnormalities due to some external factors. Increased attention during 1967 and 1968 will be directed toward the identification of the particular environmental factors involved.

Since the cause of chromosomal abnormalities is generally unknown, a number of possible pathways are being explored. The Colorado researchers are currently investigating the possibility that a latent virus infection in the mother around the time of conception might be one factor involved.

Chicago researchers are studying the relation of German measles, regular measles and infectious hepatitis to chromosomal abnormalities. This group is continuing its studies of chromosome aberrations and extending them to investigations of stillbirths and spontaneous abortions.

Other research efforts are involved with studying the biochemistry of cell cultures. Since genes work through enzymes, these substances in particular are under study. Attempts are being made to correlate any biochemical and enzymatic deviation with chromosomal abnormalities.

"Genes mapping" is another area of on-going research. As yet, no specific genes have been definitely located on any of the autosomes. Mapping of gene locations on human chromosomes is of prime concern to cytogeneticists since genes carry

the heredity traits. Subjects with abnormal chromosomes, and their relatives, are currently being studied clinically in hopes that specific traits can be assigned to particular chromosomes.

Radiation also seems to have a direct influence on chromosome patterns. One investigator has been able to quantify the dose of radiation necessary to cause specific chromosome breaks in tissue cultures. He is following up this work in both cell cultures and laboratory animals.

Research grants program analysis

	1967 estimate	1968 estimate	Increase or decrease
1. Reproduction.....	\$15,945,000	\$16,675,000	+\$730,000
2. Growth and development.....	11,701,000	12,210,000	+526,000
3. Aging.....	3,784,000	3,871,000	+187,000
4. Mental retardation.....	4,756,000	5,080,000	+307,000
5. Subtotal, regular program.....	36,186,000	37,936,000	+1,750,000
6. General research support.....	3,807,000	4,395,000	+588,000
7. Scientific evaluation.....	100,000	100,000	0
8. Categorical clinical research centers.....	500,000	500,000	0
9. Total research grants.....	40,593,000	42,931,000	+2,338,000

Distribution of research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting projects.....	771	23,475,000	818	24,704,000	+47	+1,229,000
2. Competing projects.....	316	12,711,000	325	13,232,000	+9	+521,000
3. Subtotal, regular program.....	1,087	36,186,000	1,143	37,936,000	+56	+1,750,000
4. General research support.....		3,807,000		4,395,000		+588,000
5. Scientific evaluation.....		100,000		100,000		0
6. Categorical clinical research centers.....		500,000		500,000		0
7. Total research grants.....	1,087	40,593,000	1,143	42,931,000	+56	+2,338,000

Fellowships

	1967 estimate	1968 estimate	Increase or decrease
Total fellowships.....	\$3,800,000	\$4,102,000	+\$302,000

INTRODUCTION

The fellowships program for the National Institute of Child Health and Human Development reflects a net increase of \$302,000 in 1968 over 1967, including an increase of \$361,000 to support an additional 29 noncompeting continuations, and a decrease of \$59,000 from the 1967 level for competing projects.

The net increase provides \$50,000 to support an additional 7 post-doctoral fellowships, \$98,000 for 9 special fellowships, and \$154,000 for 7 research career development awards.

PROGRAM PLANS FOR 1967 AND 1968

The interest in research covering the entire human lifespan necessitates that many scientists working on child health and human development studies have cross-disciplinary training. The fellowship awards, by providing support for additional training to experienced investigators, is one of the most effective training mechanisms.

The type of fellowship awards funded by the National Institute of Child Health and Human Development in the past will again be given strong priority

in 1967 and 1968 because of the ever-increasing demands of research in these fields. Of prime importance is the training of obstetricians, pediatricians, and gynecologists. One of the National Institute of Child Health and Human Development's special research problems is a lack of trained clinicians—scientists who approach the investigation of health problems from the standpoint of human observation rather than controlled experiments. Gynecology, obstetrics and pediatrics are the clinical specialties which relate most frequently to the National Institute of Child Health and Human Development's particular interest in the health problems of mothers and children. There are too few pediatricians and obstetricians now, even to supply the nation's medical care needs. It is therefore essential that the total number be increased rather than that any be diverted from clinical care to research.

In addition to these types of training, a number of new interdisciplinary fields are developing rapidly and need fellowship support. These include many emerging areas within behavioral biology, such as psycholinguistics and behavioral genetics, both of which are strongly developmental in their approach and particularly are relevant to the Institute's research in mental retardation.

Strides have already been made in the use of psycholinguistics with mentally retarded children but the field has hardly been explored yet. This field may also have great relevance to the Growth and Development Program's attempts to evaluate and stimulate the learning process in normal children. Behavioral genetics is especially relevant to the reproduction program both in contraceptive research and in the efforts to reduce congenital defects leading to infant deaths. Genetic studies also play a major role in the search for means of preventing mental retardation caused by chromosomal abnormalities.

The Institute will also sponsor training in developmental pharmacology—a field of vital importance to all the Institute's major programs. From thalidomide to tranquilizers, the use of drugs and anesthetics has proven to be a powerful instrument for improvement or destruction. The field is really just in the formative stage; the possibilities are many. With sufficient numbers of trained researchers, developmental pharmacology could become one of the most effective tools in the National Institute of Child Health and Human Development's attack on human health problems.

Distribution of fellowships

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Continuations:						
(a) Noncompeting.....	127	\$2,092,000	156	\$2,453,000	+29	+\$361,000
(b) Competing.....	31	395,000	30	387,000	-1	-8,000
2. Supplementals.....	(7)	15,000	(7)	15,000	0	0
3. New.....	129	1,298,000	124	1,247,000	-5	-51,000
4. Total fellowships.....	287	3,800,000	310	4,102,000	+23	+302,000

Fellowships (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Postdoctoral.....	127	\$896,000	134	\$946,000	+7	+\$50,000
2. Special.....	63	681,000	72	779,000	+9	+98,000
3. Research career:						
(a) Career.....	8	240,000	8	240,000	0	0
(b) Development awards.....	89	1,983,000	96	2,137,000	+7	+154,000
4. Total fellowships.....	287	3,800,000	310	4,102,000	+23	+302,000

Program analysis

Program area	1967 estimate	1968 estimate	Increase or decrease
Reproduction.....	\$1,767,000	\$1,780,000	+\$13,000
Growth and development.....	1,363,000	1,393,000	+30,000
Aging.....	250,000	280,000	+30,000
Mental retardation.....	420,000	649,000	+229,000
Total fellowships.....	3,800,000	4,102,000	+302,000

Training grants

	1967 estimate	1968 estimate	Increase or decrease
Total training grants.....	\$9,619,000	\$9,762,000	+\$143,000

INTRODUCTION

This activity provides for grants to institutions for support of graduate students in the fields of reproduction, growth and development, aging, and mental retardation.

The request for a new increase of \$143,000 includes an increase of \$1,195,000 to support an additional 16 non-competing continuations offset by a reduction of \$1,052,000 in the level of competing projects.

PROGRAM PLANS FOR 1967 AND 1968

A major purpose of the Institute is to support research into the health status, needs and problems of human beings of all ages from infancy to old age. During 1967, we made some progress in supporting training of professional personnel for research in critical areas of concern—reproduction and population studies, perinatal and infant mortality, growth and development, mental retardation, and aging. However, increased emphasis on all of these areas requires that training be accelerated if we are to meet intramural staffing needs as well as those of academic institutions and other research-oriented facilities. Critical shortages of trained investigators in such disciplines as obstetrics, gynecology, pediatrics, child psychiatry, and other areas will continue to be major targets of this Institute's training support during 1968.

Reproduction, Population, and Perinatal and Infant Mortality.—For the remainder of 1967 and 1968, funds will be used to stimulate research training in areas pertinent to further knowledge of the reproductive processes and the understanding of population problems. Specifically, training for obstetricians, gynecologists, physiologists, biologists, and endocrinologists will be emphasized. Population problems will necessitate training competent scientists to study fertility regulation, population dynamics and the sociological and psychological aspects of reproduction. Emphasis will also be given to training the researchers necessary to find new ways to combat perinatal and infant mortality and morbidity, including basic researchers and clinical investigators in such areas as pediatrics and developmental pharmacology.

Growth and Development.—During 1968, efforts to increase the number of scientists studying both the physiological and psychological development of children will be continued. Training will be supported in such areas as nutrition, pediatrics, developmental biology, physiology, genetics, neurology, sociology, child psychiatry and psychology.

Adult Development and Aging.—Training of scientists to conduct research in cellular biology, molecular biology, physiology, and psychology, as these relate to understanding of the aging process, will continue to receive emphasis during 1968. Support of research training concerned with the social and psychological problems of older citizens will be emphasized. Training will also be encouraged in areas of intramural interest to aid in staffing the new gerontology building in Baltimore.

Mental Retardation.—The needs of some 12 mental retardation research centers throughout the country emphasize the critical problem of training new

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scientists to staff these facilities. It is estimated that as these centers become operational they will require 1,000 new scientists. During 1968, funds will be used for training in the various biological, psychological, sociological and other fields necessary to further research efforts against mental retardation. Areas of training support will include pediatrics, neurology, cytogenetics, sociology, child psychiatry, and psychology to name only a few.

Distribution of training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Continuations:						
(a) Noncompeting.....	111	\$7,165,000	127	\$8,360,000	+16	+\$1,195,000
(b) Competing.....	10	816,000	9	693,000	-1	-123,000
2. Supplementals.....	(11)	151,000	(11)	151,000	0	0
3. New.....	20	1,387,000	7	458,000	-13	-929,000
4. Scientific evaluation.....	(3)	100,000	(3)	100,000	0	0
5. Total training grants.....	141	9,619,000	143	9,762,000	+2	+143,000

Training grants (by type of program)

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Graduate.....	141	\$9,519,000	143	\$9,662,000	+2	\$143,000
2. Scientific evaluation.....	(3)	100,000	(3)	100,000	0	0
3. Total training grants.....	141	9,619,000	143	9,762,000	+2	143,000

Program analysis

	1967 estimate	1968 estimate	Increase or decrease
Reproduction.....	\$3,898,000	\$3,933,000	+\$35,000
Growth and development.....	2,881,000	2,906,000	+25,000
Aging.....	1,450,000	1,465,000	+15,000
Mental retardation.....	1,290,000	1,358,000	+68,000
Subtotal, regular program.....	9,519,000	9,662,000	+143,000
Scientific evaluation.....	100,000	100,000	0
Total training grants.....	9,619,000	9,762,000	+143,000

Direct operations—Laboratory and clinical research

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	200	\$1,562,000	261	\$1,904,000	+61	\$342,000
Other expenses.....		3,605,000		3,838,000		+143,000
Total.....	200	5,257,000	261	5,742,000	+61	+485,000

INTRODUCTION

This activity includes laboratory and clinical research in reproduction, growth and development, aging, and mental retardation. Laboratory studies currently underway are in the areas of basic reproductive biology and ecology, biomedical

and behavioral aspects of mental retardation, diagnosis and clinical studies of the retarded, and gerontology research using both humans and animals at the Gerontology Branch in Baltimore and in Bethesda.

The funds requested for laboratory and clinical research represent a net increase of \$485,000 in 1968 over 1967. A program increase of \$739,000 is included which is partially offset by a decrease of \$500,000 representing a non-recurring expense during the remainder of 1967 for the purchase of specialized equipment to be installed in the new gerontology building. Also included is an increase of \$211,000 for centrally furnished services from the National Institutes of Health management fund, and a net increase of \$35,000 for mandatory items such as annualization of positions new in 1967, offset by one day less pay in 1968.

PROGRAM PLANS FOR 1967 AND 1968

Reproduction, Population, and Perinatal and Infant Mortality.—This program's intramural activity is centered in laboratories in the Clinical Center where scientists are concentrating on problems relating to conception, gestation, relationships between the anterior-adrenal-reproductive systems, and the role of biotin, a crystalline growth vitamin of the vitamin B complex, and other factors in reproductive physiology.

Other studies underway in this laboratory include systematic, quantitative investigations of hormone production and secretion throughout pregnancy and the menstrual cycle in rhesus monkeys, studies of ovarian function in monkeys and other pregnant animals, steroid hormone metabolism studies in pregnant monkeys, and research on the nature and effects of fetal hormones in both fetal rabbits and pigs.

During the remainder of 1967 and 1968, these intramural researchers will continue current research efforts and initiate studies relating to implantation and placenta formation in monkeys and other animals. Elucidation of basic reproduction through the studies conducted in this laboratory and in other institutions is expected to aid in preventing pregnancy-related problems and supply valuable knowledge for use in the development of safer and more efficient means of contraception.

Growth and Development.—Intramural research in this area includes nutritional studies dealing with carbohydrate metabolism and the combined effects of hormones on glucose (sugar) metabolism. Current studies focus on liver function, the influence of hormones on key regulating enzymes, and the changes which occur during the developmental process. In addition, scientists are investigating learning environments of preschool children, characteristics of children from deprived environments, relationships between environment, and changes in these children's intellectual and personality characteristics, and interrelationships between cognitive and personality functions of preschool children. These studies are being carried out with subjects from the Washington, D.C. Head Start program.

For the rest of 1967 and 1968 the Institute will expand its efforts to include studies in developmental biochemistry, developmental immunology, physical growth and developmental physiology including neurophysiology. The Head Start studies will continue, and it is expected that investigations will be initiated into the physiological correlates of behavior, cognition and learning, social development, and personality development.

Adult Development and Aging.—A major effort of the Aging Program is to bring to fruition the plans for its intramural research. Intramural research on aging has been carried out by the National Institutes of Health since 1941 when a research activity in that field was established at the Baltimore City Hospitals. This activity eventually became the Gerontology Branch of the National Heart Institute and in 1965 was transferred to the National Institute of Child Health and Human Development. The staff of this intramural research activity has grown from a few persons in 1941 to approximately 80 at present. Currently the research laboratories are in the Baltimore City Hospitals, but a separate Federal building is being constructed on the grounds adjacent to the hospital and will be complete in 1967. This building will provide space for a staff of approximately 300 persons working on many aspects of the aging process. Studies will be made at many levels of complexity ranging from molecular structure to social processes. The activities being carried out there will be expanded as rapidly as positions can be made available and staff can be recruited. This intramural program offers an opportunity for the direct support of work highly relevant to the aging process, at all levels of complexity, from the molecular to the sociological.

This building will provide a center for many kinds of research on aging. Not only will direct intramural research be carried out there but facilities will be available for collaborative research directed toward aging. This will be carried out with investigators from the Baltimore City Hospitals, the John Hopkins School of Medicine, and the University of Maryland School of Medicine. In addition, facilities will be available, for visiting scientists wishing to carry out research requiring the colonies of young and old animals that will be available there.

Mental Retardation.—This program is presently centered in the Children's Diagnostic and Study Unit at the National Naval Medical Center and in the Laboratory of Biomedical Sciences.

The Children's Diagnostic and Study Unit conducts clinical research and diagnosis utilizing patients eligible to receive care at the U.S. Naval Hospital. This unit also contributes case material for basic research in the biomedical and behavioral aspects of mental retardation. The clinic team has been conducting studies on effective diagnostic counseling techniques and on learning, motivation, and teaching as these relate to the mentally retarded. During 1968, efforts will be expanded to include research on improving attending behavior in preschool retardates, assessing behavior of neonates, free-play situation behavior, and operant conditioning audiometric techniques.

Institute scientists are also emphasizing studies in biochemistry, cytogenetics, and neurophysiology. During 1967 they have been working in borrowed space at the National Institutes of Health and the National Naval Medical Center. Additional space will soon be available at the National Naval Medical Center to consolidate most of this research in laboratory facilities located adjacent to the Children's Diagnostic and Study Unit.

Collaborative research and development

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	46	\$391,000	46	\$401,000	0	+\$10,000
Other expenses.....		986,000		986,000		0
Total.....	46	1,377,000		1,387,000	0	+10,000

INTRODUCTION

This activity serves the important purpose of supplementing and complementing our intramural research programs. It is one of the most effective ways for coordinating program development in the major areas of interest—reproduction and family planning, perinatal biology and infant mortality, growth and development, aging, and mental retardation.

Program liaison is maintained and furthered through support of interdisciplinary research conferences and symposia and through Scientific Information Centers which are being established. In addition, public information activities insure that the Institute's programs and goals are appropriately reflected to interested segments of the public.

PROGRAM PLANS FOR 1967 AND 1968

Of the \$10,000 net increase, \$7,000 will be used for scientific information centers in aging, growth and development, and reproductive biology.

The primary objective of these Centers is ultimately to provide a basis for critical interdisciplinary analyses of current research and future research needs in the program areas. Corollary to this is the provision to all the biomedical, social, and behavioral disciplines concerned with each of the program areas a ready access from a single source to past and current research and research-related services; formulated plans for future research, whether formally published in scientific journals or available through information progress reports; and a rapid identification of people and institutions working in any particular field.

A necessary base to both of these objectives is a compilation of information which is as complete as possible, wherever in the world it is available. With

this information available, the researcher can move ahead confident that he has not missed any information that will help him in his research and with the assurance that he is not unnecessarily duplicating work already sufficiently performed. The practitioner will have available to him that research which is now and potentially ready for application and evaluation in the field.

The critical analyses will provide both the extramural research community and the Institute's intramural research program with identification of gap areas present in current research and with potential new research directions.

In 1967 material for the Information Centers in Aging, Growth and Development and Reproductive Biology will be indexed and abstracted, and abstract journals published. It is expected that surveys on current research in Reproductive Biology will be ready for publication in 1967, and for the other two areas during the first part of 1968.

Included in the net increase is \$5,000 for centrally furnished services from the "National Institutes of Health Management Fund" offset by a decrease of \$2,000 for one less day of pay in 1968.

Biometry, epidemiology, and field studies

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	51	\$423,000	51	\$438,000	0	+\$15,000
Other expenses.....		1,498,000		1,501,000		+3,000
Total.....	51	1,921,000	51	1,939,000	0	+18,000

INTRODUCTION

This activity supports the Institute scientific staff in planning and conducting epidemiologic and biometric investigations and conducts research in epidemiological and biometric theory, techniques and methods. It also collects and analyzes program statistics for various programs and executes statistical studies for use in program planning, development and evaluation.

The requested net increase of \$18,000 includes a \$15,000 program increase, \$5,000 for centrally furnished services from the "National Institutes of Health Management Fund", offset by a \$2,000 decrease for one day less pay in 1968.

PROGRAM PLANS FOR 1967 AND 1968

The need for sound epidemiologic and biometric studies in the area of reproduction is particularly great. One of the epidemiological projects currently being conducted is a study of the characteristics of the human menstrual cycle. University affiliated researchers began the menstrual history study in 1934. The study has continued until the present time, accumulating data of over 27,000 person-years of menstrual experience. In 1966, the Institute contracted to support this research. At present, there are 2,200 women actively collaborating in the study. Data includes information concerning duration of menstruation, and the influences of pregnancies, illness, surgery, drugs, and environment on the menstrual cycle.

The menstrual experience data which has been gathered as a result of this study is perhaps the largest and most comprehensive in the world. The analyses resulting from this data will be a major resource to all studies concerned with menstruation. Computer methodology is currently being used to find the most efficient ways of recording, storing, and retrieving the mass of information for fast and easy reference.

In 1967, studies of the menstrual cycles and pregnancies of Eskimo women will be initiated. These will provide data comparable to the data in the long-range study mentioned above, and will help science assess environmental, cultural, and behavioral influences in the reproductive processes.

Another important behavioral study currently being conducted is a survey of family planning practices in the United States. This is the third of a series of surveys, the first two having been conducted in 1955 and 1960. Not only does the study provide data comparable to the 1955 and 1960 studies for measuring

family planning and fertility trends over a period of years, but it also provides vital information on use of oral contraceptives according to race, religion, family size, education, age, and socio-economic levels. In addition to collecting statistics about past, present, and future use of the oral contraceptives, the survey includes sources of family planning information and other birth control methods used. Analysis of these data will continue in 1967, providing up-to-date and comprehensive information concerning the social and psychological aspects of family planning—an area of great importance in reproduction and population studies.

Extensive epidemiological studies are also being conducted in the field of Growth and Development. As a result of increasing evidence that severe malnutrition may retard intellectual development, the Institute has contracted for a field study in Guatemala to investigate the impact of nutrition on intellectual and physiological development. A highly qualified research team has developed new techniques for a multi-disciplinary study assessing physical and intellectual growth in village populations. Within the next year, the use of food supplements will be started within the villages studied. The project is expected to extend over a number of years to permit evaluation of the long-term effects of dietary improvement.

The Institute is supporting a cooperative study by several western states to collect epidemiologic information on the children residing in institutions for the mentally retarded. The survey is particularly designed to assess the handicapping conditions present in these children, with the goal of developing knowledge which will lead to better methods of caring for their medical and psychological needs.

Training activities

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	5	\$43,000	5	\$44,000	0	+\$1,000
Other expenses.....		47,000		47,000		0
Total.....	5	90,000	5	91,000	0	+1,000

Lack of sufficient numbers of trained scientists has always been a crucial problem. The direct training program is an especially effective means of coping with this problem. The program is geared to the needs of our intramural research operations by providing supplementary or cross-disciplinary training for the Institute's scientific staff members or those who are planning to join the staff. The program increase of \$1,000 will provide for the increased costs of supporting this training.

Review and approval of grants

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	83	\$763,000	84	\$793,000	+1	+\$30,000
Other expenses.....		927,000		993,000		66,000
Total.....	83	1,690,000		1,786,000	+1	+96,000

This activity is composed of professional and supporting personnel who are responsible for the administration of the Institute's several grants activities. This involves planning and development of programs in research, training, and fellowships that will best serve to accomplish the desired results in the problem areas for which this Institute is responsible; the securing of review and evaluation of research and training grant applications for presentation to the National Institute of Child Health and Human Development Council; required Council staff assistance; liaison with applicants, grantees, other components of National Institutes of Health, Public Health Service, advisory bodies, and interested organizations; continued surveillance of scientific activities and progress of the

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research and training grant programs; and recording and reporting of fiscal and scientific information relevant to all grant transactions.

Included in the \$96,000 net increase is a program increase of \$44,000 which will be used to meet increased staff costs due to the added workload in the grant areas. In addition, there is an increase of \$3,000 for one day less pay in 1968. There are also increases of \$52,000 for centrally furnished services from the "National Institutes of Health Management Fund".

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	45	\$445,000	46	\$461,000	+1	+\$16,000
Other expenses		369,000		420,000		+51,000
Total	45	814,000	46	881,000	+1	+67,000

This activity includes the Offices of the Director, Associate Director for Planning and Evaluation, Executive Officer, Administrative Officer, Budget Officer, and their supporting staffs including clerical staff for the Personnel Office. These offices are responsible for the general administration, direction, and coordination of the Institute programs as well as the review of current and proposed operations.

The \$67,000 net increase request for program direction includes a program increase of \$50,000 to continue effective management of a growing organization, \$19,000 for centrally furnished services from the "National Institutes of Health Management Fund"; offset by a \$2,000 decrease for one day less pay in 1968.

New positions requested in 1968

Laboratory and clinical research	Grade	Annual salary
Medical officer	GS-15	\$17,550
Scientist administrator	GS-15	17,550
Scientist administrator (2)	GS-14	30,212
Psychologist	GS-13	12,873
Geneticist	GS-13	12,873
Chemist	GS-13	12,873
Biochemist (2)	GS-12	21,554
Biologist	GS-12	10,927
Do.	GS-11	9,221
Chemist (2)	GS-11	18,442
Administrative assistant	GS-11	9,221
Research technician (2)	GS-9	15,292
Chemist	GS-9	7,696
Public health nurse	GS-8	7,068
Biomedical laboratory technician	GS-8	7,068
Biology laboratory technician (2)	GS-7	12,902
Biologist (3)	GS-7	19,353
Social science analyst	GS-7	6,451
Chemist (2)	GS-7	12,902
Purchasing agent	GS-6	5,867
Physical science technician	GS-6	5,867
Secretary (2)	GS-5	10,662
Laboratory technician (3)	GS-5	15,993
Chemist	GS-5	5,331
Medical technician (2)	GS-5	10,662
Clerk-typist (2)	GS-4	9,552
Medical technician (2)	GS-4	9,552
Supply clerk	GS-4	4,776
Clerk-typist (2)	GS-3	8,538
Animal caretaker	GS-3	4,269
Laboratory worker	GS-3	4,269
Laboratory helper (2)	GS-2	7,850
Director grade (2)	CO	32,520
Senior grade (3)	CO	38,160
Full grade (6)	CO	57,919
Senior assistant grade (2)	CO	15,964
Total (61)		510,199
Review and approval: Medical officer (1)	GS-15	17,550
Program direction: Administrative officer (1)	GS-12	10,927
Total, new positions, all activities (63)		538,676

SUBSTITUTE LONG-RANGE OBJECTIVE

Senator HILL. Dr. La Veck, you may proceed in your own way. We are happy to have you here.

Dr. LA VECK. Mr. Chairman and members of the committee:

It is a privilege for me to appear before this committee for the first time as Director of the National Institute of Child Health and Human Development. For the benefit of those of you who are new to this committee, I would like to make two points which may help in understanding our budget request.

First, we are a relatively young Institute, having been established only a little over 4 years ago. Second, unlike those Institutes which are primarily concerned with one category of diseases or part of the body, this Institute seeks to acquire new knowledge and deeper insight into the array of health problems and requirements of mothers and children and into the nature of the developmental processes of all individuals throughout the lifespan. The overall long-range objective of the Institute is improvement in the quality of human existence through greater scientific understanding of the developmental process.

The achievement of this goal requires that the Institute study many complex and interrelated problems. Of necessity, to most effectively utilize its resources, the Institute has had to give priority to selected problem areas. I would like to discuss some of these areas today.

Senator HILL. Doctor, may I ask, before you came to the Institute, where were you, sir?

Dr. LA VECK. I was previously in the State of Washington as the director of a school for the mentally retarded, and later head of the crippled children's program in the State of Washington.

Senator HILL. That was good background work for you, sir.

Dr. LA VECK. I think so, sir.

CONCERN OVER INFANT MORTALITY RATES

There is a growing concern about infant mortality rates in the United States. The yearly decrease has slowed and leveled out so that there has not been an appreciable improvement in recent years. Twelve other developed countries have lower infant mortality rates than the United States.

Senator HILL. Twelve others, you say?

Dr. LA VECK. Yes, sir.

In addition, large discrepancies exist between rates for various population groups within the United States.

Senator HILL. How do you explain 12 other countries? We are the richest, and we think the most powerful country in the world.

HIGH PREMATURE RATE IN UNITED STATES

Dr. LA VECK. Our infant mortality rates were compared with six other developed countries, and the conclusion was that our high premature rate in this country was perhaps the greatest factor in leading to the high infant mortality rate. About 8.3 percent of all infants born in this country are premature, whereas in some of the other developed countries it ranges between 5 and 6 percent.

Senator HILL. To what do you ascribe these premature births?

Dr. LA VECK. This is probably due to the fact that we have groups of deprived populations scattered throughout the country where there is poverty, insufficient medical attention, and lack of good nutrition. These populations cannot or do not avail themselves of some of the services that they need.

Senator HILL. We have a more diverse population, really, from that standpoint than some other countries. One of our witnesses spoke earlier about Holland. I think you would find no such diversity there as you would find here. Is that correct?

Dr. SHANNON. And Holland is one of the lowest of the infant mortality rates.

Senator HILL. Having been there and seen the population, I would think that is true.

Dr. LA VECK. The Institute considers that the infant mortality problem in this country is sufficiently serious to warrant a major effort to identify and remedy the underlying causes. The Institute has become the focal point for the coordination, stimulation, and support of basic research as it relates to this national problem.

A major concern of this Institute is the stimulation and support of fundamental research which relates to various aspects of maternal and infant health and well being.

COMPARISON OF UNITED STATES AND UNITED KINGDOM INFANT MORTALITY RATE

Senator HILL. How does our infant mortality rate compare with the British Isles, England, Scotland, Wales, and that part of Ireland under the United Kingdom?

Dr. LA VECK. The infant mortality rate in the United Kingdom is 19.6 deaths per 1,000 live births, compared to our infant mortality rate in 1965 of 24.7.

Senator HILL. So they have a better record than we do.

Dr. LA VECK. That is correct.

PROGRAM ACTIVITIES AND GOALS

Program activities stress the identification of new knowledge which can contribute to man's better understanding of the infant mortality problem and ultimately to make it possible to correct, to the maximum extent possible, the causes of infant mortality. Program goals are threefold and evolve around pregnancy maintenance and management, fetal survival and well-being, and disorders of infancy.

PROGRESS IN MANAGEMENT OF RH HEMOLYTIC DISEASE

In this area of Institute concern there have been some rewarding achievements. For example, progress has been made in recent years in the management of Rh hemolytic disease or erythroblastosis fetalis. Caused by an incompatibility of blood between mother and fetus, the condition is responsible for a large number of deaths among newborns.

During the past year, an Institute grantee in New York summarized the success of using a technique called amniocentesis to reduce fatal deaths in Rh-affected pregnancies. First developed in New Zealand, this technique has become a highly successful aid in saving babies in

these pregnancies. In amniocentesis, a needle is inserted into the amniotic sac, from which some of the fluid which surrounds the fetus is withdrawn. Analysis of the fluid indicates whether the fetus is in danger from Rh hemolytic disease.

Senator HILL. That is real progress.

Dr. LA VECK. It is definitely real progress.

The procedure has the advantage of signaling the need for pregnancy intervention and transfusions.

In about 400 pregnancies where Rh was a problem and amniocentesis was used, perinatal loss (stillbirths plus neonatal deaths) was 9 percent of the total number of Rh-affected babies. Prior to the time when amniocentesis was used in the management of Rh-sensitized pregnancies, perinatal loss due to Rh was 30 percent of the total number of Rh-affected babies.

Senator HILL. How long have we had this procedure now?

Dr. LA VECK. This has been perfected during the past few years.

Senator HILL. I knew it was something more or less recently.

Dr. LA VECK. It has not been used widely, however, until the last 2 years.

Senator HILL. It takes time to get this knowledge out; does it not?

Dr. LA VECK. It does; yes.

DEVELOPMENTS IN PREVENTING OCCURRENCE OF RH-SENSITIZATION

Of still greater interest are recent developments in the attempt to prevent the occurrence of Rh-sensitization. Several Institute grantees, as well as scientists in England and Germany, have found that administration of anti-Rh antibody gamma globulin within a few hours after delivery of the first baby prevents the formation of antibodies.

The first baby is rarely in danger in these pregnancies. However, passage of blood from the fetus to mother at delivery or before introduces fetal cells into the mother's blood which may start the slow development of anti-Rh antibody in the mother. Subsequent fetuses are thus affected by a reaction initiated by the first Rh-positive infant.

Although these studies on an immunizing agent are in the preliminary stages, virtually total protection has been achieved in more than 250 women in clinical trials. The use of this agent promises to eliminate Rh incompatibility as a factor in infant mortality. I feel that this is a real advance.

Senator HILL. It is a real advance, very definitely, and it comes, as you say, recently.

ACTIVITIES IN BEHAVIORAL SCIENCES

Dr. LA VECK. Yes. Next, I would like to tell you of our activities in the behavioral sciences.

The scientific exploration of the entire life process is a research task of unprecedented scope. The role of the behavioral sciences in this exploration is clearly set forth in the legislative history and the law which establishes the Institute. The behavioral sciences are not just concerned with one phase of life or with one problem. Rather, behavioral studies begin at the reproductive level and extend logically through the period of adult maturation and aging.

We are building a strong behavioral science program to make an integrated multidisciplinary approach to our basic mission—the study of man's life cycle. In examining the entire lifespan of human development, the behavioral sciences have an opportunity to enhance our understanding of what determines a particular behavior. This understanding may then lead to ways of improving behavior.

EFFECTS OF ENVIRONMENTAL DEPRIVATION ON CENTRAL NERVOUS SYSTEM

For example, the Institute is supporting studies on the effects of environmental deprivation on central nervous system development. Recently a group from the University of California at Los Angeles has described studies with rats in which environmental conditions were sufficiently profound to alter brain weight and various biochemical systems.

Rats maintained for 30 days after weaning under conditions of environmental complexity or enrichment differ significantly from their isolated littermate controls. The rats in the enriched environment had heavier brains and greater acetylcholinesterase activity than the isolated rats.

LEARNING DEFICIT OF OLDER PEOPLE

At the upper end of the age spectrum, researchers interested in psychological processes in the aged have long recognized that the elderly experience more difficulty in learning than their younger associates. A recent series of studies at Duke University center for the study of aging and human development has shown that this learning deficit of older people is not as great as generally believed.

This institute-supported research has demonstrated that the elderly learn nearly as well as their younger companions but because of increasing anxiety may refuse to respond.

The scientists at Duke considered learning as actually encompassing two processes: the acquisition of information, and performance involving the use of this information. Test results showed that, as a result of greater anxiety, older people seem to be hampered in the performance aspect of the process.

These are only two of the many projects supported by the Institute which are designed to provide basic information about mental, emotional, social, and biological development.

In addition, a major thrust of the Institute's behavioral science activities is to develop knowledge that will make it possible to evaluate and fully utilize the intellectual potential of each child. For instance, a number of studies are directed toward maximizing language acquisition, learning capacity and personality development among disadvantaged children. Studies of the potential relationship between malnutrition in early life and intellectual development are being conducted.

RESEARCH IN FAMILY PLANNING

I would like to turn now to another problem area on which the Institute is focusing its attention; namely, research in family planning. The problems of excessive population growth and the subsequent need for family planning research and services is receiving increasing attention throughout the country.

Our Institute has the responsibility for promoting and supporting research in this important area. The Institute has three general areas of interest: reproductive biology, social and psychological aspects of family planning, and contraceptive methods.

USE OF ORAL CONTRACEPTIVES

Of current interest is the family planning practices of American families. Last year the Institute awarded a contract to a Princeton University research team to study this problem. The investigators have just published preliminary findings of the survey which indicate that an estimated 6.4 million married women have used oral contraceptives and that approximately 3.8 million are using them right now.

Senator HILL. How long a period of time would that cover, that 6.4 million?

Dr. LA VECK. The oral contraceptives have been available since 1960, so this assessment is from 1960 to 1965.

Senator HILL. All right.

Dr. LA VECK. The Institute has a particular concern about oral contraceptives which are in such wide use. We have a coordinated and expanding program to develop information which will clearly set forth the immediate and delayed effects of this remarkably effective method. In addition, the Institute is supporting a number of research projects which may lead to new and more effective methods of contraception.

MENTAL RETARDATION RESEARCH CENTERS PROGRAM

I would like to mention the Mental Retardation Research Centers program. Under this program, administered jointly by the Institute and the Division of Research Facilities and Resources, four institutions received awards this year. A total of 12 institutions have now received aid for the construction or the equipping of mental retardation research facilities.

The cost of new construction and remodeling under this legislation totals \$42,921,004 for the 12 centers. Of this amount, the grant awards total \$25,207,675 under the 1963 congressional legislation authorizing the Public Health Service to provide matching funds for the construction of facilities for mental retardation research.

It is estimated that 2 years after completion of construction of the research centers approximately 1,200 investigators would be engaged in research relating to mental retardation and related aspects of human development.

The planning and development of these research centers is a complex process requiring 3 to 5 years from initial planning to occupancy. The first two mental retardation centers constructed under this program authority are planned for operation and occupancy in 1967 and three should open in 1968.

During the interval between award and completion of construction, the Institute's staff initiates consultation and assistance to the awardee to assure that research and training programs are in operation or in readiness when the facility is opened.

We are looking forward to the opening of these centers for they promise to make a significant contribution in our battle against mental retardation.

Senator HILL. We surely need to win that battle.

Dr. LA VECK. We certainly do.

Senator HILL. Just before I returned to Washington in January, I visited a school in my State of Alabama. The children in the school are so mentally retarded they are not educatable. They are only trainable. If you want a situation that breaks your heart, it is a school of that type. Think how little in the past, how little we have done to try to prevent that kind of a situation.

Dr. LA VECK. The University of Alabama does not have a mental retardation research facility, but the university received an award to construct a university-affiliated facility for the mentally retarded.

Senator HILL. It has been approved now, but they are just starting, really.

FACILITIES FOR INTRAMURAL RESEARCH PROGRAM

Dr. LA VECK. Construction and planning of facilities for our intramural research program have been moving along at a steady pace. The new building for the Gerontology Branch in Baltimore is scheduled for occupancy in the late fall of 1967.

We have renovated more space at the National Naval Medical Center for a small mental retardation biomedical and behavioral research laboratory to support the Children's Diagnostic and Study Branch, which is an outpatient unit.

Also, the reproduction research facilities on the grounds of the medical school in Puerto Rico, to be shared with the National Institute of Neurological Diseases and Blindness, are due for completion in the fall of 1969.

Senator HILL. It will take you that long?

Dr. LA VECK. Yes, sir; it will take that long.

SHORTAGE OF RESEARCH PERSONNEL

It has been clear since the Institute was organized that the most crucial problem it faces is the critical shortage of research personnel in fields pertinent to the Institute. The ability of the Institute to develop successful research programs is dependent on how well training programs alleviate the manpower shortages that continue to exist in fields essential to the Institute's programs.

In our training programs, we seek to produce researchers who will have the skills and the interest to expand our present meager understanding of the complex phenomena which characterize development of the human organism, not only in terms of his physical form and function, but also in terms of his mental, emotional, perceptual, intellectual, and social development.

The training review committees established last year for aging, reproduction, child development, and mental retardation have proved to be an effective mechanism for making the best use of our training dollars.

SUPPORT FOR TRAINING GRANTS, FELLOWSHIPS, AND DEVELOPMENT AWARDS

With the increases in training funds granted us by Congress in fiscal years 1966 and 1967, there has been a satisfactory level of support for approved training grants, fellowships, and development awards. We have not had to deny support of approved applications.

Senator HILL. You have not had to deny any?

Dr. LA VECK. Not until the current time.

Senator HILL. What do you contemplate between now and July 1?

Dr. LA VECK. We will be able to fund all approved applications up until July 1, 1967.

Senator HILL. For training?

Dr. LA VECK. Yes. This will not be true in fiscal year 1968. We anticipate not being able to fund about 44 training grants at a cost of approximately \$2.8 million.

Senator HILL. How many do you think you will be able to fund?

Dr. LA VECK. We will fund two additional training grants, two more than we have now. We are currently able to fund 141 training grants, and we will be able to fund 143. Seven of those will be new training grants.

POSSIBLE NEED FOR RESIDENCY TRAINING

Manpower in the nonclinical disciplines seems to be increasing at a faster rate than in the clinical disciplines. The Institute anticipates that it may need to incorporate support for appropriate residency training into its research training programs in order to insure an adequate level of clinical emphasis on maternal and child health and development.

Senator HILL. What do you attribute this to?

Dr. LA VECK. One reason I think is through our predoctoral and postdoctoral training programs we have been able to fund Ph. D.'s in their training programs.

Dr. SHANNON. Could I comment on that further, sir?

Senator HILL. Yes.

Dr. SHANNON. I think this reflects the very difficult problems of this particular Institute. Clinical interest in many of its problems is of fairly recent origin. As a consequence, they do not have established basic knowledge which is available for application to clinical problems. As this Institute develops, one can expect the development of a broad scientific base, and then, at a later time, the entry of the clinician.

The organization and structure of the medical schools do not provide for research of this sort, more particularly clinical research of this sort. When we went before the Congress for new authorization for these activities, we put the highest priority on the establishment of a limited number of complex research institutes that are not bound by the disciplinary structure of the medical school.

The ones that Dr. La Veck spoke about were the first ones and will come into operation later this year.

Until these centers become operational, one will not see very rapid movement. They really are the core of this Institute's program.

Senator HILL. Yes.

Dr. LA VECK. In summary, the Institute has had an active and productive year, with solid accomplishments of which it can be justly proud. Problem areas have been carefully identified and the Institute has developed strategies aimed at solving these problems.

REQUESTS COMPARED WITH 1967 APPROPRIATIONS

For our activities in the coming fiscal year, we are submitting a request for \$68,621,000. This compares with a base of \$65,161,000 for 1967, and represents an increase over the 1967 comparative operational budget of \$3,460,000. For grants we are requesting an additional \$2,783,000; of which \$2,338,000 is for research and \$445,000 is for fellowships and training. For direct operations we are requesting an additional \$677,000.

I shall be happy to answer any questions.

FUNDS DENIED BY ADMINISTRATION

Senator HILL. Doctor, the administration denied you certain funds, \$1,892,000, did it not?

Dr. LA VECK. That is correct.

Senator HILL. Have you asked for any release of those funds?

Dr. LA VECK. Yes. We have. A memorandum was prepared for Dr. Shannon approximately 2 or 3 weeks ago asking for the release of approximately \$1.4 million to support projects that are meritorious and have been approved by our Council and by the Study Section.

Senator HILL. What answer did you get from the chief?

Dr. LA VECK. He was very cooperative. This has been passed on to the Surgeon General.

Senator HILL. What answer did you get from the Surgeon General?

Dr. SHANNON. Senator Hill, it is too early. We are not as fast as Dr. La Veck indicates. Actually, we have a request from the Arthritis Institute for the same thing, and we are waiting for information from them.

Senator HILL. What about Neurology? It had the largest figure, I believe.

Dr. SHANNON. All I can say for the record, sir, is that they have not requested the release.

Senator HILL. But Arthritis and Human Development—

Mr. CARDWELL. All of these fall in the category described today, the 1967 anti-inflation program.

Senator HILL. I understand that.

Thank you, sir.

ANTICIPATED DEFICIENCY

You have spoken of some of your balances and deficiencies that you have.

Dr. LA VECK. One of the deficiencies that we anticipate is in the area of research grants, and particularly where we will be confronted with a problem of funding, is with the mental retardation research centers. As I mentioned, five will become operational in the near future, and it is estimated that the NICHD Institute will be requested to support meritorious research and research training projects at the level of about \$1 million for each of these centers.

Now, this means approximately \$5 million in 1968. In order to support these activities in the mental retardation research centers, it will be necessary to reprogram funds that we have tentatively identified with the other four program areas in our Institute.

Senator HILL. This \$5 million is not in this budget, unless you take it from other sources; is that correct?

Dr. LA VECK. That is correct, sir.

REDUCTION IN RESEARCH GRANTS

Senator HILL. What other programs, specifically, will you cut as a result of the reduction made in your budget request?

Dr. LA VECK. The major cut is in the area of research grants. We anticipate in 1968 that we will have 213 grant applications that will be approved, but we will not be able to fund. This will amount to approximately \$9.5 million.

Senator HILL. How many do you say you have now that you have not been able to fund?

Dr. LA VECK. For the current year, between two and two and a half million dollars in applications that we cannot fund.

Senator HILL. And if you are going to adequately support these mental retardation programs, you have to have adequate funds, as you have said?

Dr. LA VECK. Yes, sir.

Senator HILL. Dr. Shannon, is there anything you want to add.

COST OF OPERATING RESEARCH FACILITIES

Dr. SHANNON. We know from experience that to operate a research facility costs about as much, on an annual basis, as the construction of the facility. If you take this program on mental retardation—Dr. La Veck gave you a figure of a total cost of construction of those resources to be what?

Dr. LA VECK. \$25 million.

Dr. SHANNON. No, the total cost.

Dr. LA VECK. It was \$25 million Federal share; \$43 million total cost.

Dr. SHANNON. So the cost of operation of these centers will be at the rate of something on the order of \$45 million a year. As I said earlier, it is our hope that, having constructed these centers for this special purpose—

Senator HILL. That we would make use of them.

Dr. SHANNON. I would point out that the Congress thought these centers so important that they were constructed with preferential status. I hope the results are not left idle.

Senator HILL. That would be most unfortunate with such a compelling need for these resources. Is that not right?

Dr. SHANNON. Yes.

Senator HILL. Is there anything else you gentlemen would like to add?

Dr. LA VECK. No, sir.

Dr. SHANNON. No, sir.

Senator HILL. You have made a very fine statement, sir. I think Dr. Shannon was fortunate to get you to head up his new Institute. Our first head stayed 1 year and left us. I could not blame him.

I understood fully why he did go, but I am glad that we have you here, sir.

I certainly appreciate your statement.

SUBCOMMITTEE RECESS

The subcommittee now stands in recess.

(Whereupon, at 12:40 p.m., Tuesday, May 2, 1967 the hearing was recessed subject to call.)

DEPARTMENTS OF LABOR AND HEALTH, EDUCATION, AND WELFARE, AND RELATED AGENCIES APPRO- PRIATIONS FOR FISCAL YEAR 1968

THURSDAY, MAY 4, 1967

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10 a.m., in room 1224, New Senate Office Building, Hon. Lister Hill (chairman) presiding.

Present: Senator Hill.

PUBLIC HEALTH SERVICE

REGIONAL MEDICAL PROGRAMS

STATEMENT OF DR. ROBERT Q. MARSTON, DIRECTOR, ACCOMPANIED BY KARL D. YORDY, ASSISTANT DIRECTOR; CHARLES HILSENROTH, EXECUTIVE OFFICER, AND JAMES LAWRENCE, FINANCIAL MANAGEMENT OFFICER, DIVISION OF REGIONAL MEDICAL PROGRAMS; DR. JAMES A. SHANNON, DIRECTOR; RICHARD L. SEGCEL, EXECUTIVE OFFICER; DR. WILLIAM H. STEWART, SURGEON GENERAL; CHARLES MILLER, CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

REGIONAL MEDICAL PROGRAMS

To carry out title IX of the **Public Health Service** Act, **\$45,004,000** **\$64,314,000**, of which **\$43,000,000** **\$59,400,000** shall remain available until June 30, **1968** 1969, for grants pursuant to such title.

Amounts available for obligation

	1967	1968
Appropriation.....	\$45,004,000	\$64,314,000
Unobligated balance brought forward.....	21,934,000	21,000,000
Comparative transfers within NIH.....	356,000	
Unobligated balance carried forward.....	-21,000,000	
Unobligated balance lapsing Dec. 31, 1966.....	-11,982,000	
Total.....	34,312,000	85,314,000

2044 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Obligations by activities

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants: Regional medical programs.....		\$31,952,000		\$50,400,000		+\$48,448,000
Direct operations:						
Professional and technical assistance.....	35	613,000	47	2,968,000	+12	+2,355,000
Review and approval of grants.....	48	723,000	49	816,000	+1	+93,000
Program direction.....	52	1,012,000	53	1,130,000	+1	+118,000
Total obligations.....	135	34,300,000	149	85,314,000	+14	+51,014,000
Unobligated balance, reserve.....		12,000				-12,000
Total, obligations and balance....	135	34,312,000	149	85,314,000	+14	+51,002,000

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	135	149	+14
Full-time equivalent of other positions.....	2	4	+2
Average number of all employees.....	128	142	+14
11 Personnel compensation:			
Permanent positions.....	\$1,186,000	\$1,327,000	+\$141,000
Positions other than permanent.....	40,000	50,000	+10,000
Other personnel compensation.....	12,000	23,000	+11,000
Total personnel compensation.....	1,238,000	1,400,000	+162,000
12 Personnel benefits.....	103,000	115,000	+12,000
21 Travel and transportation of persons.....	90,000	120,000	+30,000
22 Transportation of things.....	2,000	2,000	-----
23 Rent, communications, and utilities.....	30,000	40,000	+10,000
24 Printing and reproduction.....	19,000	34,000	+15,000
25.1 Other services.....	371,000	396,000	+25,000
25.1 Project contracts.....		2,225,000	+2,225,000
Payment to "National Institutes of Health management fund".....	431,000	490,000	+59,000
26 Supplies and materials.....	14,000	23,000	+9,000
31 Equipment.....	50,000	69,000	+19,000
41 Grants, subsidies, and contributions.....	31,952,000	80,400,000	+48,448,000
Total obligations by object.....	34,300,000	85,314,000	+51,014,000

Summary of changes

1967 enacted appropriation.....	\$45,004,000
Unobligated balance brought forward to 1967.....	21,934,000
Comparative transfers within NIH.....	356,000
Unobligated balance carried forward to 1968.....	-21,000,000
Unobligated balance lapsing Dec. 31, 1966.....	-11,982,000
Unobligated balance, reserve.....	-12,000
1967 estimated obligations.....	34,300,000
1968 estimated obligations.....	85,314,000
Total change.....	+51,014,000

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 2045

	Base		Changes to base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built-in:				
1. Annualization of positions new in 1967.....				\$134,000
B. Program:				
1. Grants.....		\$31,952,000		48,448,000
2. Professional and technical assistance.....	35	566,000	12	2,297,000
3. Review and approval of grants.....	48	658,000	1	41,000
4. Program direction.....	52	693,000	1	40,000
5. Centrally furnished services from the National Institutes of Health management fund:				
(a) Professional and technical assistance.....		47,000		21,000
(b) Review and approval of grants.....		65,000		6,000
(c) Program direction.....		319,000		32,000
Subtotal management fund.....				59,000
Total program items.....			14	50,885,000
DECREASES				
A. 1 less day of pay in 1968.....				-5,000
Total net change requested.....			14	51,014,000

EXPLANATION OF CHARGES

Grants for regional medical programs.—The majority of regional medical programs will move from the planning stage to operational status during 1968. The increase of \$48,448,000 will be used primarily to initiate these new operational programs and to provide second year funding to those programs begun in 1967. By the end of 1968, it is estimated that operational grants will have been awarded for pilot projects and demonstrations in some 48 regions.

Professional and technical assistance.—The program increase of 12 new positions and \$2,297,000 will be used to provide assistance in the implementation of new regional medical programs, increase the supply of medical personnel trained in the concepts and methodologies of continuing education for physicians and other health service workers, and support controlled studies of the feasibility of utilizing computer-based systems effectively in regional medical programs.

Review and approval of grants.—The program increase of one position and \$41,000 will provide support for increased workload and complexity in the review and management of operational grants.

Program direction.—An increase of one position and \$40,000 will be used to increase the capability of the program direction staff in the area of computer-based systems and their application to regional medical programs.

AUTHORIZING LEGISLATION

The legislative authority in Section 301 of the Public Health Service Act which provides for the award of grants for research, research training, and fellowships is included in the section of the justifications under the tab, "Preamble Paragraph" in Volume V.

The Public Health Service Act, Title IX, Education, Research, Training, and Demonstrations in the Fields of Health Disease, Cancer, Stroke and Related Diseases,

"SEC. 900. The purposes of this title are—

"(a) Through grants, to encourage and assist in the establishment of regional cooperative arrangements among medical schools, research institutions, and hospitals for research and training (including continuing education) and for related demonstrations of patient care in the fields of heart disease, cancer, stroke, and related diseases; * * *"

"SEC. 901. (a) There are authorized to be appropriated \$50,000,000 for the fiscal year ending June 30, 1966, \$90,000,000 for the fiscal year ending June 30, 1967,

and \$200,000,000 for the fiscal year ending June 30, 1968, for grants to assist public or nonpublic private universities, medical schools, research institutions, and other public or nonprofit private institutions and agencies in planning, in conducting feasibility studies, and in operating pilot projects for the establishment, of regional medical programs of research, training, and demonstration activities for carrying out the purposes of this title. Sums appropriated under this section for any fiscal year shall remain available for making such grants until the end of the fiscal year following the fiscal year for which the appropriation is made."

Grants for regional medical programs

	1967 estimate	1968 estimate	Increase or decrease
Grants for regional medical programs.....	\$31,952,000	\$80,400,000	+\$48,448,000

Introduction

Grants are awarded to assist in the planning and establishment of regional cooperative arrangements among medical schools, research centers, hospitals, and other medical institutions and for demonstrations of patient care in the fields of heart disease, cancer, stroke and related diseases. These cooperative arrangements and demonstration programs will afford the health professions and institutions of the Nation an opportunity to make the latest advances in the diagnosis and treatment of these diseases more widely available, and to do so in ways that are particularly responsive to the problems and possibilities of their regional areas.

Program plans for 1967 and 1968

Two general types of grants are authorized by the enabling legislation—planning grants and operational grants. The large majority of grants awarded in FY 1967 will be of the former type, for this is the year in which the basic relationships, characteristics, and even geographic areas of most of the Nation's regional medical programs are being planned. It is important to realize that there is no well defined, textbook approach to planning and implementing a regional medical program. The most effective ways of applying new medical knowledge to improving health services will vary from area to area, and can only grow out of a broadly representative regional effort which relies primarily on the knowledge, initiative, and resourcefulness of the people who live and work there. By the end of 1967, it is estimated that some 54 planning grant applications will have been received, representing regions which in the aggregate cover virtually the entire country including Hawaii and Puerto Rico.

By January 1, 1967, four operational grant applications had also been received and were in the review process, and others are expected, but it will not be until 1968 that most regional medical programs move into the operational phase. Operational grants will of necessity be much larger than planning grants. In fact, prototype estimates and the early applications received indicate that a single regional program could effectively utilize as much as \$5,000,000 a year in its early stages. Features of a regional medical program might well require new complex diagnostic and treatment equipment, the conduct of extensive continuing education programs for health professionals, and the utilization of communication and data processing facilities. Applicants will require reasonable assurance of the availability of adequate funds to justify major career and institutional commitments during the planning and early operational phases. The increase of \$48,448,000 in obligational authority in 1968 will help fund these operational grants and provide the necessary assurance of the availability of support.

Many different types of pilot projects need to be assisted, but a strong emphasis on continuing education of health professionals will be common to all of them. They may include such programs as the support of specialized consultants visiting community hospitals on a periodic schedule, and the conduct of scheduled training programs in community facilities and at medical centers. Innovative methods of presenting information and carrying out training sessions will be tested in numerous settings to determine more effective methods of reaching and involving busy medical practitioners and other types of health workers. The broader use of such techniques as two-way communication systems and closed-circuit television will be evaluated on a selected basis.

No attempt is made to list the countless types and varieties of projects being considered by the planning groups throughout the Nation. The approaches and proposals are imaginative and innovative. Careful review of planning applications by local and national advisory groups have assured that funds are being effectively used to develop workable, cooperative arrangements among medical schools, research institutions and hospitals, and for developing novel approaches for the most rapid and useful application of research results in the diagnosis and treatment of heart disease, cancer, and stroke and related diseases.

Professional and technical assistance

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	35	\$324,000	47	\$391,000	+12	+\$67,000
Other expenses.....		289,000		2,577,000		+2,288,000
Total.....	35	613,000	47	2,968,000	+12	+2,355,000

Of the \$2,355,000 increases requested, \$2,225,000 will be used to support contract programs in two broad areas—(a) the utilization of computer-based systems in regional medical programs, and (b) continuing education of workers in the health professions.

(a) Regional medical program planning involves study of the interrelationships among the components of the health system rather than the functioning of its individual components. Many of the early planning applications have proposed the utilization of systems analysis approaches. As a stimulus to the effective use of systems analysis at the regional level, and to guard against duplicative effort, the Division will conduct studies which concentrate on basic regional medical problems of general applicability, as well as supporting specific limited studies tailored to the needs of one or more regions in the area of computer-oriented communications.

Rapid developments in adapting time-shared computers to the needs of medical research and patient care, resulting from computer research supported by the National Institutes of Health at Massachusetts General Hospital, have made regional computer centers technically feasible. This technical breakthrough promises the commercial availability of the necessary hardware and supporting program aids, and thus suggests applications in the regional medical programs for rapid interchange of patient medical information between these centers and the community hospitals and physicians. Such interchange promises quicker utilization of new knowledge derived from medical research and more rapid feedback of patient information to the medical centers. The Division will be involved in supporting tests for determining the feasibility of using commercially available, time-sharing computer service bureaus as solutions to the problem of intraregional communication of medical information.

(b) One of the areas important to the success of regional medical programs is that of continuing education in the health fields. If the "latest advances" in the diagnosis and treatment of heart, cancer, and stroke are to be made more readily available to the Nation, attempts must be made to communicate those advances to individuals in the health professions. The legislation assumes that such information is available in the medical schools, research institutions, and hospitals for research and training and that through continuing education it may be shared with all engaged in health care.

There are, however, shortages of medical educators conducting research into new and improved techniques of continuing education. There is need for more trained teachers to staff university medical schools and departments of continuing education and a marked expansion of continuing education is required at the community hospital level in each of the regions where medical programs are to be established.

To achieve an expansion of trained personnel in this field, the Division proposes to contract with existing departments of continuing education in the medical schools and with other nonprofit organizations for long and short-term programs of training in continuing education, by awarding fellowships and

traineeships for one to three years, and by also mounting a series of short courses of from one to six weeks to upgrade the teaching qualifications of existing personnel in continuing education. These approaches are designed to produce an increased supply of trained teachers, upgrade the qualifications of existing teaching personnel, and improve techniques of continuing education for the health professions.

The balance of the program increase will support expanded field activities providing help to regional groups in developing planning and operating grant applications and implementing operational activities. In addition to maintaining a scientific overview of the ongoing programs, the staff will also have increasing responsibilities for providing a vital communication link among the various regional groups and the Division. This interchange of information will enable each group to benefit from the experiences and innovative solutions to problems from other areas.

Included in this net increase is \$38,000 for annualization of positions new in 1967, offset by \$1,000 for one less day of pay in 1968. There are also increases of \$21,000 for centrally furnished services from the "National Institutes of Health Management Fund".

Review and approval of grants

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	48	\$441,000	49	\$495,000	+1	+\$54,000
Other expenses.....		282,000		321,000		+39,000
Total.....	48	723,000	49	816,000	+1	+93,000

An increase of \$93,000 and one position is requested to strengthen the review and approval and grants management activities as the number and dollar volume of grants increase. The forthcoming operational grants will be inherently more complex than the planning grants, requiring more perceptive analysis and management. Included in this net increase is \$48,000 for annualization of positions new in 1967, offset by \$2,000 for one less day of pay in 1968. There are also increases of \$6,000 for centrally furnished services from the "National Institutes of Health management fund".

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	52	\$576,000	53	\$629,000	+1	+\$53,000
Other expenses.....		436,000		501,000		+65,000
Total.....	52	1,012,000	53	1,130,000	+1	+118,000

An increase of \$118,000 and one position will be used to provide program direction in the field of computer-based systems and their utilization in regional medical programs. Included in the net increase is \$48,000 for annualization of positions new in 1967, offset by \$2,000 for one less day of pay in 1968. There is also an increase of \$32,000 for centrally furnished services from the "National Institutes of Health management fund".

New positions requested in 1968

Activity	Grade	Annual salary
Professional and technical assistance:		
Director grade.....	CO-6	\$11,840
Senior grade (2).....	CO-5	20,556
Engineer.....	GS-14	15,106
Scientists (2).....	GS-14	30,212
Public health program specialist.....	GS-14	15,106
Public health analyst.....	GS-11	9,221
Do.....	GS-9	7,696
Administrative assistant.....	GS-7	6,451
Secretary.....	GS-6	5,867
Clerk-stenographer.....	GS-5	5,331
Total (12).....		127,386
Review and approval of grants: Grants management specialist.....	GS-12	10,927
Program direction: Systems analyst.....	GS-15	17,550
Total new positions, all activities (14).....		155,863

PUBLIC LAW 89-239 GRANTS

Senator HILL. The subcommittee will kindly come to order. Dr. Marston, glad to have you back with us, sir.

Dr. MARSTON. Thank you.

Senator HILL. Proceed now in your own way.

Dr. MARSTON. Senator Hill, 1 year ago I appeared before you on behalf of the regional medical programs for heart disease, cancer, stroke, and related diseases which were authorized by Public Law 89-239 only a few months previously in the fall of 1965.

Now, 1 year later I know you will be pleased to know that planning grants have been awarded that now involve approximately 80 percent of the population of the Nation, and we have under review at present, additional applications that will move this figure up above 98 percent.

Senator HILL. Practically take in everybody then, won't it?

Dr. MARSTON. Yes, sir. Now in addition to that, we have made the first operational grants to four regions in the country. This is Albany, Missouri, Kansas, and the intermountain region, which is centered in Utah. Deeply involved in these activities are individuals representing the health professions, institutions, and organizations in these regions.

I would like to call your attention to some of the objectives and plans outlined a year ago as a background against which to discuss the progress made during the last year and the plans for future action as the Nation moves into an even more vigorous phase in the implementation of this program.

OBJECTIVES AND PLANS

The principal purpose of this important new program is to provide the medical profession and the medical institutions of the Nation greater opportunity to make available to their patients the latest advances in the diagnosis and treatment of heart disease, cancer, stroke, and related diseases.

This overall objective is to be accomplished through the planning and establishment of regional cooperative arrangements among medical institutions which can serve as the framework for linking programs of research, training, continuing education, and demonstration activities in patient care conducted by medical schools, medical organizations, research institutions, and hospitals.

RESEARCH AND TEACHING

The regional cooperative arrangements are intended to assure close contact between the development of new medical knowledge and techniques in the environment of research and teaching and the delivery of high quality patient care in the hospital environment.

SCIENCE IMPACT

There are a number of long-range factors and trends which led Congress to authorize this program. The most important of these factors is the impact of science on the nature of medicine and medical practice.

The dynamic growth of medical research in this country during the past 20 years and the resulting advances in knowledge form a scientific base which is the beginning point for regional medical programs.

Senator HILL. We have really made progress, haven't we?

Dr. MARSTON. Yes, sir.

Senator HILL. Of course, you have got to realize we are now in the world of science.

SERVICE REGIONALIZATION AND FACILITY UPGRADING

Dr. MARSTON. Some of the other factors include the 40-year discussions on regionalization of medical services, the evolution of the medical schools with the accompanying development of great medical centers, the increase and upgrading of hospitals and health facilities with assistance from the Hill-Burton program, and the underlying social factors relevant to health concerns, including the rising expectations of the consumer of health services who increasingly is coming to expect modern medical science to have the solutions to his health problems.

REPORT OF PRESIDENT'S COMMISSION ON HEART DISEASE, CANCER AND STROKE

Over the years many public and private studies have been concerned with the problems this program seeks to solve. However, the immediate impetus for the introduction of legislation was the publication of the Report of the President's Commission on Heart Disease, Cancer, and Stroke which focused on the relationship between science and service in medicine.

The needs which were stressed by the President's Commission are, in fact, a statement of the great opportunities that exist for the improvement of the health of American people.

This committee, Mr. Chairman, deserves a full measure of the credit for the development of these opportunities. It is because we have seen the development of a great biomedical research effort, including the provision of modern medical facilities and the development of increased training opportunities for medical personnel, that we can seek to make more widely and promptly available the results of progress.

SPECIAL PROGRESS REPORT

The goals and purposes of regional medical programs represent unquestioned basic human needs. More than any other program I know

the primary question is not whether it would be good to have such programs but rather how well can they work.

A detailed special progress report has already been submitted to the committee. It reviews the basic nature of the regional medical programs and their progress during the past year, and it summarizes the issues which will be dealt with in greater detail in the Surgeon General's report to the President and Congress required by law to be submitted by June 1967.

PROGRESS

Public Law 89-239 was enacted and signed by the President in October 1965. The division of regional medical programs was established in December 1965 and the first meeting of the National Advisory Council was held the same month.

This Council met approximately every 2 months; that is, twice the normal number of meetings for councils in order to supply the advice needed.

SURGEON GENERAL'S REPORT

In January 1967 we held a meeting of some 650 of the most important people from all areas of the health fields, from all parts of this country to give us the necessary grassroots information for the report which the Surgeon General must make this summer.

PLANNING GRANT APPLICATIONS

Even before the law was passed, many groups in the country had started the preplanning necessary to submit an application for a planning grant. By January 1, 1967, 48 planning grant applications requesting more than \$30 million had been received. In addition, applications from four regional medical programs for operational pilot projects were also received requesting almost \$12 million.

Forty-four planning grants have already been approved by the Advisory Council representing an investment of almost \$20 million in Federal grant funds for the first year of planning activities.

The 44 planning grant applications encompass more than 80 percent of the country and as I said earlier, we have applications under review which increase this to over 98 percent. It is fair to say at this time that this Nation has started a new health program.

Applications have received intensive review by experts in health, education, and community affairs from all sections of the country and finally by the National Advisory Council as required by law. Although intensive review has resulted in less rapid expenditure of funds, it has assured a clearer definition of objectives and mechanisms it has created confidence in the regional medical programs.

I would not like to give you the idea that all of this has been accomplished without having serious questions raised during the past year.

UTILIZATION OF HEALTH RESOURCES

The legislation which created regional medical programs is being implemented during a period of uncertainty in the health field. There are problems of limited health manpower to meet the increasing needs and demands for health services.

Indeed, one of the main objectives of this program is to achieve better utilization of all resources, particularly manpower.

HEALTH FIELD LEGISLATION

There are problems of adaptation to changes which are outgrowths of both the needs leading to the establishment of regional medical programs and the current enactment of other broad legislation in the health field such as medicare.

There is at the same time the increasing need to relate national objectives more closely to the specific problems of local areas and regions.

It is against this background plus the very magnitude of the aspirations of this program that this progress should be viewed.

NATIONAL MASTER PLAN AND COOPERATIVE ARRANGEMENTS

A year ago there was suspicion that some national master plan was about to be imposed upon the Nation. Groups that were not accustomed to working so closely together were concerned with the prospect of such new relations. However, the type of cooperative arrangements which are now being developed to link science and service are evoking an unexpected and unprecedented degree of enthusiasm, excitement, and action.

Senator HILL. That is very encouraging, isn't it?

Dr. MARSTON. Yes, sir.

Senator HILL. Very encouraging. Because that is so important. You have to have that team, haven't you?

Dr. MARSTON. Yes, sir; and I think that this program came along at a time when this need was felt very acutely in many areas in the health field, and this is one of the reasons for the response that it has had.

Senator HILL. Yes.

REGIONAL ADVISORY GROUPS

Dr. MARSTON. We do hear evidence of this from what people are telling us, we see it in the commitments that are being made by individuals, organizations, and institutions, and recognize it in the development of new groups with potentially great influence for good, the regional advisory groups, which are broadly representative of the health, medical, and civic organizations of the regions. A typical regional advisory group has the following composition:

21 percent are practicing physicians;

13 percent are from cancer societies, heart associations, and other voluntary health agencies;

18 percent are associated with medical schools and affiliated hospitals;

12 percent are administrators of hospitals;

8 percent are nurses and other health workers;

8 percent are from public health departments;

14 percent represent the public at large; and

6 percent, other.

The State health officer of a Western State said recently that for the first time in his 26-year career he saw the representatives of all of the major health resources in his area sit down to discuss problems they had in common.

The president of a State medical society in the Midwest told me that for the first time in his experience, his colleagues had been stimulated and encouraged to think seriously as a group about how the services to all patients in the area could be improved. A practicing physician in one of the Rocky Mountain States told me he viewed this program as the most important and exciting development in the health field in his time.

ESTABLISHING COMMUNICATION BETWEEN HEALTH AND MEDICAL FIELDS

Senator Hill, I was at a meeting in Chicago yesterday, with representatives from about a thousand hospitals, and in one of the prepared statements, the associate dean at Yale University described this in this fashion:

I believe there is one thing we can say about regional medical programs all over the country—wherever they have been initiated. They have generated more good, solid and productive communications in the health and medical fields than any other program or event in decades. If the whole national program were turned off tomorrow, and not another nickel's worth of planning or program were initiated in the name of RMP, it would still be the biggest bargain of the age in terms of new found and newly opened relationships in health.

In Connecticut, because of regional medical programs, we have had people talking and planning together who have not given each other the time of day for decades * * *

And this is along the line that you were mentioning earlier, of the importance of the program.

Senator HILL. Of that team.

INSTITUTIONS AND CIVIC LEADERS PROGRAM COORDINATION

Dr. MARSTON. Important institutions, influential organizations, and professional and civic leaders are making serious commitments to the program.

Those who have accepted the full-time responsibility for coordinating programs, represent a cross section of "Who's Who in American Medicine." They include persons with experience in high positions of great responsibility such as university vice presidents for health affairs, key administrators of health programs in the Federal Government, chief officers of professional organizations, recognized health planners, and experienced officials in State government.

The attraction of this high level of individual capability and institutional and organizational commitment is especially significant since this program involves the basic concept of decentralization by the delegation of an appropriate degree of responsibility for decision-making to the regions themselves.

DECENTRALIZATION OF FEDERALLY FINANCED ACTIVITY RESPONSIBILITY

There has been much recent discussion in the Congress and throughout the Nation of the need for some decentralization of responsibility for activities financed with Federal funds. In the case of regional medical programs this decentralization is inspired by neither political nor abstract administrative consideration. Its sole purpose is the achievement of greater effectiveness in carrying out the purposes of the program. Like democracy this approach requires faith in the com-

petence and wisdom of the participants and must allow for occasional achievements that fall short of ideal goals.

Senator HILL. No team wins every time, does it?

Dr. MARSTON. That is right, sir.

Senator HILL. Not even the University of Alabama team. We win most of them, but not all of them. Not every one.

Dr. MARSTON. I have never been to one, Senator Hill, that they did not win.

Senator HILL. All right, you can bet on them. They usually win.

Off the record.

(Discussion off the record.)

REGIONAL LEVEL PERSONNEL

Senator HILL. We will go back on the record.

Dr. MARSTON. In the regional medical programs this faith is justified by the caliber of the institutions, organizations, and individuals who have become involved on the local level.

We have an estimate now that by the beginning of June of this year, there will be more than 600 full-time people actually working at the regional level.

In addition the effectiveness of the individual programs will be monitored and evaluated systematically at both the regional and national levels to uncover deficiencies.

EARLY OPERATIONAL PROGRAMS

REGIONAL PILOT PROJECTS

The purpose of planning is to establish regional medical programs. The National Advisory Council recently recommended the approval of applications for pilot projects in four regions of the Nation, the Albany, N.Y., regional medical program, the Missouri regional medical program, the Kansas regional medical program and the intermountain regional medical program. It is important to emphasize that the activities and relationships are not limited to State borders.

APPLICATION EVALUATION

Our review committees and Council worked for more than 6 months in the evaluation of the applications for these pilot projects. While I will be very happy to answer questions concerning specific activities proposed, I would like to emphasize that a regional medical program must be more than a collection of projects.

The review process has focused on three general characteristics of the proposals. The first focus is on those elements of the proposal which represent the applicant's concept of his regional medical program.

In this way, the applicant must indicate that he has a unifying concept for choosing priorities, that there is an effective administrative and coordinating system in which the major health resources of the region are involved, and that the leadership will be adequate for guidance and coordination and that there is provision for continuous evaluation and planning.

COOPERATIVE ARRANGEMENTS' EFFECTIVENESS

The next focus is the effectiveness of the proposed cooperative arrangements. These arrangements must give evidence of serious commitment of the major health resources, assurances that the regional advisory group will have a continuing responsible role, and that the proposed activities will strengthen future cooperation.

If these two evaluations are favorable, the specific operational projects are reviewed. Each is judged for its own intrinsic merit, for its contribution to the cooperative arrangements and for the degree to which it includes the core concept of the regional medical program.

NATIONAL ADVISORY COUNCIL

Senator HILL. Who is the present Chairman of your Council?

Dr. MARSTON. The Surgeon General is the Chairman of the Council, yes, sir.

I have a list of the Council membership.

Senator HILL. I suppose Dr. De Bakey is on there, isn't he?

Dr. MARSTON. Yes.

Dr. STEWART. Senator, we run it as we run the other councils. The Surgeon General is the Chairman of the Council, but Dr. Marston is in the chair most of the time. At the Institutes the same thing is true.

Senator HILL. You might supply those names for the record.

Dr. MARSTON. All right, sir.

(The information follows:)

NATIONAL ADVISORY COUNCIL ON REGIONAL MEDICAL PROGRAMS

Leonidas H. Berry, M.D., Professor, Cook County Graduate School of Medicine, and Senior Attending Physician, Michael Reese Hospital, Chicago, Illinois.

Michael E. Debakey, M.D., Professor and Chairman, Department of Surgery, College of Medicine, Baylor University, Houston, Texas.

Bruce W. Everist, Jr., M.D., Chief of Pediatrics, Green Clinic, 709 South Vienna Street, Ruston, Louisiana.

Dr. Charles J. Hitch, Vice President of Finances, University of California, Berkeley, California.

John R. Hogness, M.D., Dean, School of Medicine, University of Washington, Seattle, Washington.

James T. Howell, M.D., Executive Director, Henry Ford Hospital, Detroit, Michigan.

Clark H. Millikan, M.D., Consultant in Neurology, Mayo Clinic, Rochester, Minnesota.

George E. Moore, M.D., Director, Roswell Park Memorial Institute, 666 Elm Street, Buffalo, New York.

Edmund D. Pellegrino, M.D., Director of the Medical Center, State University of New York, Stony Brook, New York.

Alfred M. Popma, M.D., Regional Director, Regional Medical Program, 525 West Jefferson Street, Boise, Idaho.

Mack I. Stanholtz, M.D., State Health Commissioner, State Department of Health, Richmond, Virginia.

Cornelius H. Traeger, M.D., 799 Park Avenue, New York, New York.

Chairman William H. Stewart, M.D., Surgeon General, U.S. Public Health Service, Bethesda, Maryland.

PAST MEMBERS

Mary I. Bunting, Ph. D., President, Radcliff College, Cambridge, Massachusetts.
Gordon R. Cumming, Administrator, Sacramento County Hospital, Sacramento, California.

J. Willis Hurst, M.D., Professor and Chairman, Department of Medicine, Emory University School of Medicine, Atlanta, Georgia.

William J. Peeples, M.D., Commissioner of Health, State Office Building, Baltimore, Maryland.

Robert J. Slater, M.D., Executive Director, The Association for the Aid of Crippled Children, 345 East 46th Street, New York, New York.

LIAISON COUNCIL MEMBERS

National Advisory Neurological Diseases and Blindness Council: Dr. A. Earl Walker, Professor of Neurological Surgery, The Johns Hopkins University, 601 North Broadway, Baltimore, Maryland 21205.

National Advisory General Medical Sciences Council: Dr. Edward W. Dempsey, Chairman, Department of Anatomy, College of Physicians and Surgeons, Columbia University, 630 West 168th Street, New York, New York 10032.

National Advisory Cancer Council, Dr. Murray M. Copeland, Associate Director, M.D. Anderson Medical Hospital and Tumor Institute, Texas Medical Center, Houston, Texas 77025.

National Advisory Heart Council, Dr. John B. Hickam, Professor and Chairman, Department of Medicine, Indiana University Medical Center, 1100 W. Michigan Street, Indianapolis, Indiana 46207.

Veterans Administration Liaison Representative to Council, Dr. Benjamin B. Wells, Assistant Chief Medical Director for Research and Education in Medicine, Department of Medicine and Surgery, Veterans Administration, Washington, D.C. 20420.

APPLICATION REVIEW PROCESSES

Dr. MARSTON. Following this review, the National Advisory Council makes a judgment and recommends the amount of the grants to be awarded. Subsequently staff of the Division discuss the conclusion of the total national review process with the applicant and others in the region.

In this way, the results of the national review process and the regional review process are brought together so that optimum utilization of Federal funds is assured and regional initiative and prerogatives and for decision making are protected and strengthened.

These initial applications give us some insight into the types of projects that will be carried out in implementing regional medical programs.

REGIONAL PROJECT DEVELOPMENT

We recognize that each region will need to develop its own approach to strengthening its capabilities. However the following examples may be useful in illustrating the types of projects that many regions are likely to consider:

1. The exchange of personnel between medical schools and medical centers and community hospitals.
2. Continuing education programs for medical practitioners and allied health workers at both local facilities and medical centers.

Senator HILL. That is really progress, isn't it?

Dr. MARSTON. Yes, sir.

3. Provision of consultation and other assistance to practicing physicians by medical center and other specialized personnel.
4. Development of learning centers at community hospitals.
5. Demonstrations of coronary care in teaching and community hospitals.

6. Expansion of cerebral vascular diagnostic resources:

7. Linking of rural hospitals with a medical center to provide an automated electrocardiography analysis system.

8. Demonstrations of improved methods of utilizing computers in monitoring physiologic data and in providing data for the use of practicing physicians and hospitals.

9. Studies of the best methods of providing selected detection, diagnostic and treatment services.

10. Improvement of communications systems and facilities joining medical centers and community hospitals.

11. Development of information programs to establish communications, understanding, and cooperation among the institutions, organizations and individuals involved in the program.

INTERMOUNTAIN REGION SERVICES AVAILABLE TO PHYSICIANS

Senator Hill, since this was prepared, we do have some additional specific information of how such a program might affect an individual physician.

Senator HILL. Good.

Dr. MARSTON. This is from the plans for the intermountain region. They will plan to make available to physicians in Utah, parts of Wyoming, Nevada, and Idaho some of the following services:

He will have available at his community hospital a communication network, including radio and television facilities, which will provide educational programs and opportunities for interchange and discussion with consultants at the medical center.

He will have available at his community hospital for himself, nurses, and other personnel, a training program in the resuscitation of patients with heart disease, and the necessary equipment to make it possible to carry out these techniques.

He will also have on call a medical consultant who has been specially trained to head hospital cardiopulmonary arrest alert programs.

He will be able to attend training programs in the intensive care of heart patients, or will have available for consultation medical and nursing specialists who will have completed such training.

He may have tested at his hospital the feasibility of a system that transmits, in a 24-hour-a-day operation, physiological information on heart-disease patients to a computer facility in Salt Lake City, and transmits promptly back to stations within his hospital information for diagnosis and treatment.

He will have available at his hospital a medical consultant who is a source of special information and advice on cancer, as well as more up-to-date information on the occurrence and care of cancer from a coordinating tumor registry, and more specialized techniques for handling pathological specimens.

Consultants may visit his hospital—and this is designed particularly for the communities in a sparsely settled area of the country with less than 10,000 people—periodically, to assist in the diagnosis and care of heart disease patients.

He may apply for a special clinical traineeship in cardiology that will involve specialized training at five cooperating medical institutions.

He will have available a communication and information exchange service that will provide information on the prevention and control of these diseases to public groups, as well as to professional and allied healthworkers.

OPERATIONAL PROGRAMS

It is anticipated that in 1968 operational programs will begin in more than half of the regions. It is vital that this new program be

supported adequately as it moves from the support of planning activities to the establishment of operational programs.

PLANNING ACTIVITIES

Planning activities are underway throughout the Nation. They have evoked great enthusiasm and they show great promise. The increased funds requested for the fiscal year 1968 will be used largely to turn the plans into action.

Although planning activities will continue the emphasis will be shifted to the implementation of operational pilot projects. Grants to support the operational phase of the program will require much larger sums of money than the planning activities.

Regional medical programs will not compete with programs administered elsewhere in the Public Health Service. Applicants must demonstrate the relation of the support requested under this program to funds and support available from other Federal and non-Federal sources.

GRANT FUND UTILIZATION

In summary the grant funds requested will be utilized for (1) initial funding of the remaining few planning grant applications which will not be approved by July 1, 1967; (2) second year funding for previously approved planning grant applications; and (3) to initiate new operational programs in more than half of the regions. It is expected that the greatest proportion of these funds will be utilized for operational programs.

1967 APPROPRIATION AND 1968 BUDGET REQUEST

The appropriation request for the Division of Regional Medical Programs totals \$64,314,000. It includes \$59,400,000 for grants, which when combined with \$21 million carried forward from the current year provides a total of \$80,400,000 in grant funds.

This is an increase of \$48,448,000 over the estimated 1967 obligations. The request for direct operations includes an increase of \$2,355,000 for professional and technical assistance, of which \$2,225,000 is for contracts; there is also an increase of \$93,000 for review and approval of grants, and \$118,000 for program direction. This request will allow a total increase of 14 positions over the 1967 operating level.

Senator HILL. That is a mighty good statement.

Dr. MARTSON. Thank you.

Senator HILL. It seems to me this establishment of these regional programs, together with the—I am not talking about communicable and infectious diseases now. We talked about them yesterday, didn't we, Dr. Shannon?

Dr. SHANNON. Yes, sir.

Senator HILL. It seems to me the establishment of these regional programs together with the establishment of the Institutes of Health, mark the two greatest historic forward progressive steps in the battle for the health of our people, and, of course, when we say for our people, that means really for all people. Isn't that right?

Dr. MARSTON. Yes, sir.

REGIONAL OPERATIONAL PROGRAMS

Senator HILL. Let me ask you this question: You spoke about the applications for pilot projects in four regions, and I am happy they are going there, to Albany, Missouri, Kansas, and the intermountain region.

I am glad they are going there. It is anticipated in 1968 that operational programs will begin in more than half of the regions.

I think you and I come from the same region, don't we?

Dr. MARTSON. Close to it.

JEROME COCHRAN LECTURESHIP

Senator HILL. Close to it. All right. What is the status down around Alabama, down around there?

Dr. MARTSON. I think this is a very good example of what has happened in 1 year. I was asked on the 21st of last month, Senator Hill, to make the memorial address to the Alabama State Medical Society, and delivered the Jerome Cochran lectureship.

Senator HILL. May I interrupt you there 1 minute?

Dr. MARTSON. Yes, sir.

Senator HILL. That lectureship, which is the outstanding lectureship of the State society meeting each year, was established when my father was president of the State medical society. He established the lectureship.

Dr. MARTSON. Well, my goodness.

Senator HILL. Jerome Cochran was our first State health officer.

Dr. MARTSON. Well, many people say that this lectureship is the highlight every year of the meeting.

Senator HILL. That is the lecture.

ALABAMA REGION PLANNING GRANT

Dr. MARTSON. The medical society this year structured their entire program on heart, cancer, and stroke, and in the program they pointed out that they did this because of the award of a planning grant to the Alabama region. Interestingly too, the current president of the Alabama Medical Society has just accepted the job as the No. 2 person in the regional medical program.

Dr. J. O. Finney announced this while I was there.

Senator HILL. While you were there?

Dr. MARTSON. Yes. I point this out because over and over again during this visit, it was pointed out that the medical society, the State health department—the board of censors in Alabama, the medical school, all of the resources were firmly behind this program.

So I think there are two answers. I have personal knowledge of the great interest Alabama does have in the planning grant, they do have staff on board, and they are working toward the submission of an application for an operational program.

OPERATIONS PROGRAMS

Senator HILL. Operational programs?

Dr. MARTSON. Operational programs; yes, sir. So there is a great deal of enthusiasm and evidence of progress.

Senator HILL. In other words, that is very encouraging, isn't it?
 Dr. MARSTON. Yes, sir.

JEROME COCHRAN LECTURE

Senator HILL. Well, I am glad you delivered that Jerome Cochran lecture.

Dr. MARSTON. Thank you, sir.

Senator HILL. Many years ago, after my father had established it, and after he had been president of the society, the president at the time, Dr. Harry T. Inge, of Mobile, Ala., invited him to deliver the lecture.

What do you suppose he took for his subject? Surgical complications of typhoid fever, you see. And Jim Shannon was telling us yesterday, we don't have any more typhoid, but when you had typhoid fever you used to have these ulcers, didn't you?

Dr. MARSTON. Yes, sir.

TYPHOID FEVER INCIDENTS

Dr. SHANNON. I was in Bellevue Hospital, Senator Hill; this would have been 1929 through 1931. In the season, we always had one or two cases of typhoid fever in our service. This was in New York City, as late as 1930. I was talking to some of their people in Atlantic City yesterday—I was over there for a short time—and Bellevue had not had a case of typhoid fever—they could not remember when they had last seen one.

That was the last residue of the disease that we saw in the 1920's and 1930's.

Senator HILL. Yes; well many years ago, I knew of a gentleman that died with typhoid fever, and his doctor gave him a dose of calomel. I guess that was about the worst thing you could do, wasn't it, with a typhoid fever case?

Dr. SHANNON. There is only one worse thing you can do.

Senator HILL. What is that?

Dr. SHANNON. That is do what you did, leave the vaccine on the shelf. [Laughter.]

Senator HILL. I told the story yesterday of leaving vaccine on the mantlepiece. When I was at the University of Alabama, my father had my mother call me and tell me to come down home, he wanted to give me this vaccine.

I got awfully busy. I said I could not come. I was living in a house with a good doctor. He said, "That's all right." Dr. Searcy was the name of the doctor. "He can give it to you just as well as I can. I will send it to you, and you can have Dr. Searcy give it to you."

When I left at the end of the session the vaccine was still on the mantlepiece and I had the worst headache I ever had in my life, and that was typhoid fever.

But now talking about communications, as you recall, with typhoid fever, your temperature would go down overnight, so to speak, and then start rising in the afternoon. As long as you had that temperature, you had to stay in bed, so when I had that temperature, my father read an article in the London Lancet. He used to subscribe to the Lancet, and just as he did to American publications. He read in the

Lancet of some medication that would break the fever, my father used that medication and broke my fever so I could get out of bed.

I had been there so long anyway—certainly long enough to know the next time he sent me a vaccine, I should be sure and take it.

DISTINGUISHED LECTURERS

Dr. MARSTON. They have had a distinguished group of people for this lecture. I was interested to find out that Sir William Osler was to have been the second lecturer, but he got the flu that spring, and was unable to come.

Senator HILL. That is right, he could not come, because of the flu. That is right. Did you ever read his address when you left the University of Pennsylvania?

Dr. MARSTON. Yes, sir.

Senator HILL. He was a great man. If he had come, you would know he would have given a lecture worthy of Dr. Marston. Is that right? [Laughter.]

Dr. MARSTON. Thank you, sir.

Senator HILL. He was quite a man. Have you had much difficulty in finding competent staff for your new division?

PERSONNEL AND SALARIES

Dr. MARSTON. We have done well, Senator Hill, in getting people. The biggest problem that we have had of getting people at the level we need them for this program is the salary structure, and this gets to be a real problem, when one is trying to bring in people who can give leadership in this area.

Senator HILL. That comes back to that problem that faces us in practically all of our Government activities.

Dr. SHANNON. It is particularly bad in Dr. Marston's case, because the people who have broad capabilities for planning complex programs like his are very limited in number. We hope that the program that is generally called partnership in health, which includes a provision for the training of planners, will help break this bottleneck.

We badly need expertise. There is just not enough to go around. As a consequence, many people are doing planning now without the type of systematic technical help they really need for these complex problems.

Dr. MARSTON. I think there has been a special appeal in this program that has allowed us to get people in, and in many instances, it has meant coming to us at a cut in salary.

Senator HILL. At a personal sacrifice?

Dr. MARSTON. Yes, sir.

Dr. SHANNON. Including Dr. Marston.

Senator HILL. Including the Doctor here, well he is coming right down. Jerome Cochran lecturer. Jerome Cochran was the original father of the Alabama Public Health Service. You are familiar with that.

Dr. MARSTON. With it, yes, sir.

I did my homework in preparation.

BOARD OF CENSORS

Senator HILL. You did your homework on that, didn't you? You spoke of the board of censors. They have considerable power, as you and I well know. Is that right?

Dr. MARSTON. Yes, sir.

BUREAU OF THE BUDGET REDUCTION

Senator HILL. According to figures I have before me, you have a lot of slashing this year, both by the Department and by the Budget Bureau. You got a total slash of \$138,485,000 from your request of the Department, or original estimate. Is that correct?

Dr. MARSTON. Yes, sir.

Senator HILL. How much is that going to affect your program?

Dr. MARSTON. I think, Senator Hill, at this stage, the problem in this program is twofold. One part of it is the level of support. The other one is the fact that the program now has a 3-year basis, and there is concern among institutions and individuals about making major career commitments and major institutional commitments until it is absolutely sure that this is a permanent program that is going to be funded adequately to justify the type of institutional commitment that is required. And I think that there are these two things, the level of support over the next few years, but also, making sure, with the extension of the authorizations of the program, that it is a permanent program.

Senator HILL. Yes. Well, how much are you allowed?

UNOBLIGATED FUNDS

A total of \$64,314,000. Now I believe you referred to the fact that you had some funds left from fiscal year 1967?

Dr. MARSTON. Yes, sir, \$21 million.

Senator HILL. \$21 million?

Dr. MARSTON. \$21 million. You will recall that we have anticipated from the beginning of this program the need of a 2-year authorization, because again, these are large programs, involving large areas.

Senator HILL. Surely.

Dr. MARSTON. And so we anticipated that we would need some flexibility.

Senator HILL. The idea, and so authorized in the statute, that the funds would not be limited to the particular fiscal year for which, but go into the next fiscal year?

GRANT FUNDS AVAILABLE

Dr. MARSTON. That is right. So this will give a total for grants of \$80 million for fiscal year 1968.

Senator HILL. I think you would be able to go forward pretty well with that amount of money.

Dr. MARSTON. Yes, sir, I think the program will go forward.

Senator HILL. Go forward.

STAFF PERSONNEL

I thought in spite of your difficulties, you were somewhat encouraging about your staff. Is that right?

Dr. MARSTON. Yes, sir, I am encouraged both about the staffing within the division, and the staffing out in the regions, because I think this has probably been one of the most significant evidences of the success of the programs. We have had real leaders, in area after area, who have chosen this as the program to make their career commitment. People such as university vice presidents in health affairs, private practitioners, key administrators of Federal health programs, and officers of voluntary health organizations.

The Commissioner of Health and Welfare in one large State has taken the job as program coordinator, and this has been very, very encouraging.

Now within the staff itself, we have been able to attract good people despite the salary difficulties I outlined and we anticipate that by January of 1968, we will be up to our full authorized ceiling of 149 positions proposed in the 1968 budget.

Senator HILL. You think on the whole, there will be competent people?

Dr. MARSTON. Yes, sir.

PART-TIME EMPLOYEES

Dr. SHANNON. Senator, Dr. Marston's difficulties are in part offset by the attractiveness of the program, and its opportunity for social change. This has made certain people available to him, but the problem comes from the fact that some of these people are only available for short periods of time. As the program moves into operations, he must have people who will make career commitments to this program, rather than coming to us for a year or two to help us over some specific problem.

Dr. Marston's primary concern is to attract people who will make a career commitment to this program.

Senator HILL. Is that it, Doctor?

Dr. MARSTON. Yes, sir, this is true, and as the program grows, we have both the qualitative aspect, which is the most important, and the quantitative one of an increased workload.

Senator HILL. Yes.

REGIONAL DIRECTOR CALIBER PERSONNEL

Dr. SHANNON. It will be necessary for Dr. Marston to have people on his staff of a very sophisticated capability who are just as good—and, indeed, better—than the local program coordinators (who may eventually be called regional directors), so that they—viewing the regional program from outside and viewing the activities in adjacent regions—will be able to be helpful, both in monitoring the development and providing the additional skills necessary to the progressive implementation of the regional plan.

He will need a group of very sophisticated professionals, who are not only good physicians, who not only know hospitals, but, in addi-

tion, have some conception of the social system within which they are operating. There are not too many of these people.

Senator HILL. Yes. Anything you would like to add, Dr. Stewart?

UNFAVORABLE COMPETITIVE POSITION FOR PERSONNEL

Dr. STEWART. Well, I would like to add, Senator Hill, that the No. 1 worry I have about the Public Health Service is the need for increasing numbers of highly competent personnel to run our many programs, which are expanding, which are very complicated, which are very difficult, and which require these types of individuals.

Our competitive position in the job market is not good.

Senator HILL. It is not good. I appreciate that.

Dr. STEWART. But we are getting some people of the competence we are looking for.

Senator HILL. You have got one right here.

Dr. STEWART. I like to think we attract these individuals who are willing to put up with the sacrifice because of the nature of the programs. But the numbers that are required, with the expansion that we are going through, and the increasing types of difficulties we have, is the No. 1 problem we have at the present time.

Senator HILL. I can well understand that, and I know exactly, I think, what your problem is. As I have often said, we have a lot of fine people, in the Government service, but we also have some that I call hacks. The trouble about this pay business is that all the sheep have to go through the gate at the same time. Is that right?

Dr. STEWART. Correct. Yes, sir.

Senator HILL. That presents quite a problem. Quite a problem.

UNIVERSITY OF MISSISSIPPI

Doctor, you were at the University of Mississippi, weren't you?

Dr. MARSTON. Yes, sir.

Senator HILL. They have made wonderful progress at that school—how old is it, now?

Dr. MARSTON. Eleven years old.

Senator HILL. Eleven years old. They have made tremendous progress.

Dr. MARSTON. They have got a good man heading it up, Dr. Robert Carter. He went there from Iowa, the first of February, to take my place.

Senator HILL. Went there from where the tall corn grows.

Dr. MARSTON. Yes, sir.

Senator HILL. I see. Did you go to Emery?

MEDICAL COLLEGE OF VIRGINIA

Dr. MARSTON. No, sir; I went to the Medical College of Virginia.

Senator HILL. Oh, you went to the Medical College of Virginia, down here at Richmond?

Dr. MARSTON. Yes, sir.

Senator HILL. That is quite a school itself. You would agree on that, wouldn't you?

Dr. MARSTON. Yes, sir.

Senator HILL. Well quite a school itself. Would you put it in the same class with Thomas Jefferson's school over there at Charlottesville? I guess you would——

Dr. MARSTON. Yes, sir.

Senator HILL. Off the record.

(Discussion off the record.)

CHANGES IN TRANSPORTATION AND MEDICAL HEALTH

Senator HILL. When I talk about how times have changed, I think I have told this story to you, Dr. Shannon, Thomas Jefferson decided to put his medical school, in 1825, the year before he died in 1826, he sent a man over to Edinburgh, I guess it was, to get Dublinson to come over and be the first doctor to organize that school, and it took that fellow over 3 months to get from Charlottesville, Va., to Scotland. Today he could drive his car to Dulles in 60 minutes, get on one of these big planes, and in a few hours' time, he would be in Scotland, so I say things have changed.

And we are certainly changing this medical health business.

Dr. MARSTON. It is a time of change such as I think most of us have never experienced before.

Senator HILL. Isn't that so? That is true. Get this information out.

Dr. MARSTON. Yes.

INFORMATION IMPORTED AND EXPORTED

Senator HILL. Talk about breaking that typhoid fever, an article in the London Lancet. My father read the London Lancet, a British medical journal, and other foreign publications and just as well as he read these American publications. How many doctors did that or do that?

In fact, he could not read German, but he had a professor of biology at the University of Alabama whose wife was a German, he had married her when he was over there at the University of Berlin, and he used to get these articles from these German publications and send them up there to the University of Alabama, and she would translate them for him, so he would get the benefit of those articles.

Dr. SHANNON. One of the most dramatic changes, particularly during the past 10 or 15 years, is that we now have become a major exporter of new information, rather than a simple importer.

MEDICAL TRAINING EXCHANGE

Senator HILL. Certainly, and I can remember when a doctor felt to be really best trained, he had to go to Berlin or Vienna, Paris, Edinburgh, London, or Glasgow, or some of those universities over there.

Is that right?

Dr. SHANNON. Yes, sir. It still is good to have some exchange, but we don't have the broad dependence we had at that time.

Senator HILL. Yes, I know. Well, Doctor, you brought us a very fine statement.

Dr. MARSTON. Thank you, sir.

Senator HILL. I am proud of my neighbor. We certainly appreciate this fine statement, and what you are doing.

Dr. MARSTON. I appreciate the opportunity of being able to appear before you.

Senator HILL. Thank you, sir.

Off the record.

DIVISION OF ENVIRONMENTAL HEALTH SCIENCES

STATEMENT OF DR. PAUL KOTIN, DIRECTOR, DIVISION OF ENVIRONMENTAL HEALTH SCIENCES; ACCOMPANIED BY GEORGE M. KINGMAN, EXECUTIVE OFFICER, DIVISION OF ENVIRONMENTAL HEALTH SCIENCES; ROBERT H. BRAMLET, BUDGET OFFICER, DIVISION OF ENVIRONMENTAL HEALTH SCIENCES; LELAND B. MAY, ACTING FINANCIAL MANAGEMENT OFFICER, NATIONAL INSTITUTES OF HEALTH; DR. WILLIAM H. STEWART, SURGEON GENERAL; DR. JAMES A. SHANNON, DIRECTOR, NATIONAL INSTITUTES OF HEALTH; CHARLES MILLER, CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

ENVIRONMENTAL HEALTH SCIENCES

To carry out, except as otherwise provided for, sections 301, and 311 [and 314(c)] of the Act with respect to environmental health [and arctic health] activities, [\$24,298,000] \$20,615,000.

Amounts available for obligation

	1967	1968
Appropriation.....	\$24,298,000	\$20,615,000
Comparative transfer within NIH accounts.....	+383,000	-----
Comparative transfer to "Urban and industrial health".....	-2,408,000	-----
Comparative transfer to "Communicable diseases".....	-8,727,000	-----
Total.....	13,546,000	20,615,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants:						
Research.....		\$7,016,000		\$10,421,000		+ \$3,405,000
General research support grants.....				(719,000)		(+719,000)
Environmental Health Science Institute.....		(2,500,000)		(3,500,000)		(+1,000,000)
Training.....		4,304,000		5,545,000		+1,241,000
Direct operations:						
Laboratory and clinical research.....	30	1,506,000	148	4,075,000	+118	+2,569,000
Review and approval of grants.....	16	301,000	18	356,000	+2	+55,000
Program direction.....	10	195,000	10	218,000		+23,000
Total obligations.....	56	13,322,000	176	20,615,000	+120	+7,293,000
Unobligated balance, reserve.....		224,000				-224,000
Total, obligations and balance.....	56	13,546,000	176	20,615,000	+120	+7,069,000

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Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	56	176	+120
Full-time equivalent of all other positions.....		1	+1
Average number of all employees.....	52	165	+113
11 Personnel compensation:			
Permanent positions.....	\$436,000	\$1,572,000	+\$1,136,000
Positions other than permanent.....	3,000	10,000	+7,000
Other personnel compensation.....	1,000	2,000	+1,000
Total personnel compensation.....	440,000	1,584,000	+1,144,000
12 Personnel benefits.....	37,000	148,000	+111,000
21 Travel and transportation of persons.....	67,000	152,000	+85,000
22 Transportation of things.....	53,000	73,000	+20,000
23 Rent, communications, and utilities.....	208,000	253,000	+45,000
24 Printing and reproduction.....	20,000	40,000	+20,000
25 Other services.....	147,000	210,000	+63,000
Project contracts.....	250,000	537,000	+287,000
Services of other agencies.....	21,000	2,000	-19,000
Payment to "National Institutes of Health management fund".....	434,000	1,057,000	+623,000
26 Supplies and materials.....	113,000	155,000	+42,000
31 Equipment.....	212,000	498,000	+286,000
41 Grants, subsidies, and contributions.....	11,320,000	15,966,000	+4,646,000
Total obligations by object.....	13,322,000	20,615,000	+7,293,000

Summary of changes

1967 enacted appropriation.....	\$24,298,000
Comparative transfer within NIH accounts.....	+383,000
Comparative transfer to "Urban and industrial health" (2,408,000) and "Communicable diseases" (8,727,000).....	-11,135,000
Unobligated balance, reserve.....	-224,000
1967 total estimated obligations.....	13,322,000
1968 estimated obligations.....	20,615,000
Total change.....	+7,293,000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built-in:				
1. Annualization of new positions authorized in 1967.....				\$50,000
B. Program:				
1. Research grants.....		\$7,016,000		3,405,000
2. Training grants.....		4,304,000		1,241,000
3. Laboratory and clinical research.....	30	1,216,000	118	1,961,000
4. Review and approval of grants.....	16	219,000	2	28,000
5. Program direction.....		133,000		17,000
Total program increases.....			120	6,652,000
C. Payments to the "National Institutes of Health management fund" for centrally furnished services:				
1. Laboratory and clinical research.....		290,000		590,000
2. Review and approval.....		82,000		27,000
3. Program direction.....		62,000		6,000
Subtotal, management fund increases.....				623,000
Total increases.....			120	7,325,000
DECREASES				
A. Program:				
1 less day's pay.....				-2,000
Nonrecurring items for equipment.....				-30,000
Total decreases.....				-32,000
Total net changes requested.....			120	+7,293,000

EXPLANATION OF CHANGES

Research grants.—The program increase of \$3,405,000 will provide \$719,000 for general research support grants, \$1,000,000 for the expansion of the research centers, and \$1,686,000 for an estimated additional 19 research projects in 1968.

Training grants.—The increase of \$1,241,000 will provide for the initiation of 17 new programs.

Laboratory and clinical research.—The increase of \$1,961,000 and 118 positions will provide for additional staffing and completion of the nucleus for the permanent animal colony, as well as initiation of the first phases of research in basic and applied disciplines.

Review and approval of grants.—The increase of \$28,000 provides 2 new positions and supporting services for the staff responsible for the review, processing and awarding of grants.

Program direction.—The increase of \$17,000 will provide additional operating expense support for the Director of the Division and his staff.

AUTHORIZING LEGISLATION

The Public Health Service Act, Title III, General Powers and Duties of Public Health Service, Part A, Research and Investigation.—

"SEC. 301. The Surgeon General shall conduct in the Service, and encourage, cooperate with, and render assistance to other appropriate public authorities, scientific institutions, and scientists in the conduct of, and promote the coordination of, research, investigations, experiments, demonstrations, and studies relating to the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and impairments of man, including water purification, sewage treatment, and pollution of lakes and streams."

Explanation of transfers

	1967 estimate	1968 estimate	Purpose
Comparative transfer from other NIH accounts.	\$383,000	-----	Redistribution of the National Institutes of Health management fund.
Comparative transfer to—			
Urban and Industrial Health.....	2,408,000	-----	Transfers from parent appropriation following reorganization within PHS.
Communicable diseases.....	8,727,000	-----	

Program budget—Summary

Activity	1967 estimate	1968 estimate	Increase or decrease
Research grants and general research support.....	\$7,016,000	\$10,421,000	+\$3,405,000
Training grants.....	4,304,000	5,545,000	+1,241,000
Total.....	11,320,000	15,966,000	+4,646,000

Introduction

The Environmental Health Sciences Research and Training Grant Program was initiated in FY 1964, within the administrative structure of the Bureau of State Services (EH). With the reorganization of the Public Health Service and the establishment of the Division of Environmental Health Sciences, those grant-supported activities which conformed to the mission of the new Division were assigned to the National Institutes of Health. Accordingly, the \$11,320,000, as shown above, was transferred from the FY 1967 budget for Environmental Sciences Research and Training Grants, Bureau of State Services, (EH), Public Health Service.

The extramural activities of the Division of Environmental Health Sciences have a three-fold aim. First, support is provided for numerous independent explorations of the various facets of environmental health problems. Included are fundamental and applied research, utilizing a broad spectrum of scientific disciplines, such as chemistry, pathology, toxicology, general biology, biometry,

epidemiology, clinical sciences, engineering and the physical sciences. Second, opportunities are made available for specialized training in order to enlarge the Nation's supply of highly-trained research scientists in the field of environmental health. Third, grants make it possible to take advantage of university capabilities to mobilize multidisciplinary concentrations of scientific talent for research and training that requires new methodology, new instrumentation, and innovative approaches to complex problems.

The research and training sponsored extramurally by the Division are directed toward quantification of hazards, elucidation of mechanisms of biological effects, and ultimate indication of possible methods for protection against hazards either through (a) establishing a need and basis for requiring removal of an agent from the environment, (b) identifying and verifying non-toxic concentrations of the agent in the environment, or (c) developing host-buffering techniques or other biologically feasible procedures for protection of the host.

Grant-supported research and training are an essential means through which the Division helps to achieve a national focus on the mission of assessing actual and potential risks. These risks may be associated with exposure to environmental agents of all forms (chemical, physical, and biological) entering the host through all portals (skin, respiratory tract, and gastrointestinal systems).

Research grants

	1967 estimate	1968 estimate	Increase or decrease
Regular projects.....	\$4, 516, 000	\$6, 202, 000	+\$1, 686, 000
General research support.....		719, 000	+719, 000
Special programs.....	2, 500, 000	3, 500, 000	+1, 000, 000
Total research grants.....	7, 016, 000	10, 421, 000	+3, 405, 000

The Division of Environmental Health Sciences supports research and research training on the phenomena associated with the source, distribution, mode of entry, and effect of environmental agents on biological systems as related to the health of human beings. The overall objective is to produce the basic knowledge and methodology for assessing the actual and potential risks associated with exposure to adventitious environmental hazards, and to determine tolerances and threshold of hazard to biological systems as a base for control policies and control technology.

These funds support research activities within universities, research institutes, and other public or private nonprofit institutions. They play a key role in stimulating and expanding investigations needed to: (1) define the physical, biological, and chemical hazards of the environment; (2) determine the significance of these agents to the etiology of acute and chronic disease processes; (3) develop new or improved methodology for analysis and characterization of the biological effects of known and potentially hazardous agents; and, (4) conduct epidemiological studies to test ideas on the relationship of environmental factors to disease in man, particularly in the ranges of low-level exposure involving long-term and cumulative effects as end points.

Support is provided for research which ranges from smaller and circumscribed projects to broad and composite programs that integrate the research skills and efforts of investigators with diverse training. Grants also make possible the establishment of Centers which are university-based resources for both research and training and are embedded in the substance of graduate education. Their programs embrace numerous facets of environmental health research—clinical and nonclinical activity, routine work and highly original studies, investigations by individuals and by teams, field studies, etc. They also permit advanced training in environmental health research in a depth that is relatively unavailable elsewhere. Center grants may provide for common-use equipment, special laboratories, and salaries for a core group of scientists and administrative personnel. Individual studies are generally supported by funds from other sources.

Program Plans in 1967 and 1968

The FY 1967 budget of \$4,516,000 for research projects provides for the continuing support of 37 ongoing investigations and for the activation of approximately 33 new projects. The net increase of \$1,686,000 for FY 1968 will be used as follows: \$1,273,000 for increased costs of noncompeting continuations and support

of 13 additional noncompeting continuations; \$405,000 for 6 competing projects and \$8,000 for 1 supplemental request. The \$719,000 is for the program commitment to the General Research Support Program.

The research supported by these grants will continue to emphasize mechanisms of toxic action in mammalian systems, biologic characterization of environmental agents, and synergistic effects of multiple factors. Special interest will be given to problem areas of tobacco and health, pesticides, heavy metals and trace elements, mycotoxins and other natural toxins, synthetic organic compounds, and other agents of environmental media which represent actual or potential health hazards.

During 1967, funds available for Centers will allow for continued support of 6 on going programs and the establishment of 2 new programs. The net increase of \$1,000,000 in FY 1968 will support an expanded operation of 4 ongoing programs and will permit the activation of 3 or 4 additional Centers.

Distribution of training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations.....	37	\$2,860,000	50	\$4,133,000	13	+\$1,273,000
2. Competing projects.....	33	1,556,000	39	1,961,000	+6	+405,000
3. Supplementals.....	(4)	100,000	(5)	108,000	(+1)	+8,000
4. Subtotal.....	70	4,516,000	89	6,202,000	+19	+1,686,000
5. Research and training centers.....		2,500,000		3,500,000		+1,000,000
6. General research support.....				719,000		+719,000
7. Total research grants.....		7,016,000		10,421,000		+3,405,000

Distribution of training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations.....	22	\$2,289,000	41	\$3,773,000	+19	+\$1,484,000
2. Competing.....	24	1,765,000	22	1,522,000	-2	-243,000
3. Supplementals.....	(10)	250,000	(10)	250,000	0	0
4. Total training grants.....	46	4,304,000	63	5,545,000	+17	+1,241,000

Introduction

The graduate research training grants program of the Division of Environmental Health Sciences is broad and diverse. It has a three-fold goal: (1) to increase the numbers of highly qualified scientists primarily concerned with environmental health; (2) to enable training institutions to strengthen and to enrich their research training capabilities; and (3) to expand opportunities for environmental health research training in a greater number of graduate institutions throughout the United States. These grants allow for local identification and selection of candidates with research potential, as well as provide funds for payment of stipends.

Program Plans in 1967 and 1968

The graduate research training program will continue to support the availability of high quality training opportunities in environmental health. Continued emphasis will be given to the fields of environmental toxicology, stress physiology, bioengineering, and ecology. Funds available in FY 1967 provided continuing support for 22 ongoing programs and for the start of approximately 24 new graduate programs of research training. The \$5,545,000 requested in FY 1968 will allow for continuing support of 41 ongoing programs, the renewal of 5 programs whose current support is scheduled to terminate; the initiation of 17 new programs (estimated) and provide for 10 supplements for expansion of ongoing

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graduate program of training. It is estimated that the budget will provide stipends to some 550 trainees.

Laboratory and clinical research

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits-----	30	\$193,000	148	\$1,428,000	+118	+\$1,235,000
Other expenses-----		1,313,000		2,647,000		+1,334,000
Total-----	30	1,506,000	148	4,075,000	+118	+2,569,000

Introduction

This activity supports the inhouse research programs in environmental health sciences at the National Environmental Health Sciences Center in the Research Triangle Park, North Carolina.

The increasing number of agents being introduced into the environment both intentionally and adventitiously requires an assessment of real and potential hazards by bioassay techniques and the elucidation of basic mechanisms and principles of biological action since testing of all environmental agents is manifestly impossible.

There are no sciences that have a peculiar or unique relevance to environmental health. Most can contribute to the study of groups of compounds which impinge upon biological systems in concentrations and for durations that are determined by environmental factors and with little relationship to the likes or dislikes of individuals or small or large population segments. Most of these have high inherent biological activity and impinge upon biological target systems for very long periods of time, usually in low concentrations. These compounds are potential hazards to health; generally speaking they do not have demonstrated capability to produce immediately demonstrable disease under the circumstances usually encountered. The examples of acute intoxication by high concentrations of these substances do not constitute a frame of reference against which the effects of chronic exposure at low levels can be predicted. Consequently, there is a critical need for a science base upon which to develop control measures to limit these hazards to health.

Program Plans in 1967

The efforts in 1967 will involve the development of a cohesive framework within which the various scientific disciplines and categorical needs concerned with environmental health can operate in a collaborative and interrelated manner to facilitate the achievement of maximum information for use in limiting deleterious effects of environmental hazards.

Consideration in the development of program will be given to the determination of the need for study of both existing and potential hazards. This can be accomplished by the utilization of clinical, epidemiological, and biometric data identifying individuals or groups with signs and symptoms of toxicity as well as population segments at unusual risk to environmental hazards. A second base for program is the review on a continuing basis of the chemical and physical structure and properties of existing and potential environmental agents for the purpose of identifying those of likely toxicologic significance, e.g., compounds chemically related to known economic poisons, etc. The identification and determination of the extent of the hazard will be pursued along three lines of investigation: (a) the population involved, its size, characteristics, including geography, and occupation factors and sub-segments, such as extremes of age and associated diseases; (b) the nature of the agent, including its chemical, biological and physical properties which serve as indices of suspicion, and (c) the environmental location—air, food and water.

The program for FY 1967 will involve the development and arrangement of facilities for the start of an animal colony and the availability of wet laboratory space for biochemistry, toxicology, experimental pathology and biology, as well as office space for the initiation of epidemiology and biometry studies.

Program Plans in 1968

The projected increment of 118 positions and \$2,569,000 in Fiscal Year 1968 will provide for additional staffing and completion of the nucleus for the permanent animal colony, as well as initiation of the first phases of research in basic and applied disciplines. The component units of the Center will have disciplinary or categorical identification to facilitate recruiting of scientific staff. However, the basic concern of the Center will be clearly related to problems in environmental health. The task force type of operation will characterize its basic approach to problem solving. This problem-solving, operational base of the Center will extend from studies at the molecular level to those involving the response of the intact host. Quantitative biological techniques of the most advanced and elegant nature will be used for studies in depth.

A major pressing need is the establishment of criteria which can accurately and reliably identify animal and other experimental systems having the highest possible level of predictability in assessing potential as well as existing environmental health hazards. Accepting that compatibility of findings in man and experimental species represents the most meaningful base for extrapolation, the preeminent role of bioassay in all planned studies becomes apparent. To further assure relevance of bioassay procedures to man, circumstances of human exposure will be duplicated to the maximum extent possible using the most modern and elegant of exposure techniques and manipulation of environmental conditions, including total body exposure under controlled conditions. Exposure concentrations approximating those occurring ambiently will be used. Certain protocols will require the induction of graded injury to experimental species so as to study the effect of reduced reserve and other less than optimal states on the response to environmental agents. It is to be recalled that a significant segment of the population is below optimal physiologic equilibrium because of extremes of age or the presence of antecedent or concomitant disease.

The usefulness of certain environmental agents of undetermined or potential hazard requires that diligent effort be directed to determining the validity of the no threshold concept for certain classes of compounds alone and in combination with physical agents.

There is growing recognition and corollary concern over the ability of the intact host to store certain environmental agents in various tissues and organ systems. These stored agents may exert a depot effect and may result in a progressive increase in the response of the individual to environmental agents. There remains, in addition, the need to define the reasonableness of "threshold" or "no threshold" concepts and the assessment of the effects of combinations of contaminants working in concert in an additive, potentiating or neutralizing fashion.

Fundamental studies are planned to investigate the concept of "total body burden" as a factor inducing biological change as opposed to the influence of differing amounts of individual environmental contaminants accepted by the body over differing periods of time.

An inquiry into factors that determine varying degrees of host susceptibility to different forms of intoxication is planned. The possible modifying role of enzymatic, immunologic and genetic factors will be investigated. This approach should also provide leads for purposefully altering host-environment relationships with enhancement of resistance of individuals in unavoidable high risk environment through preservation and/or potentiation of defense mechanisms.

The quantification of hazard, and the mechanisms of environmental action will require the conduct of a research program embracing laboratory sciences in the areas of pharmacology, toxicology, chemistry, biology and pathology. These disciplines will be directed to an understanding of the fundamental basis and the cellular and sub-cellular mechanisms of acute toxicity, chronic toxicity, carcinogenesis and mutagenesis as the result of physical and chemical agents. With the already exponential increase in knowledge at the cell and organelle level, optimism appears warranted for the development of generalizations and principles on which to plan program and predicate action. It is recognized that the identification of toxic agents in the environment need not inevitably connote an adverse biological effect. Such criteria are critically important and the study of effects at the cellular level is imperative.

The chemical basis (kinetics of organic reactions under conditions of high dilution) for the generation and introduction of chemical intoxicants within the environment itself is in need of elucidation. These studies are not intended to relieve industry of its responsibility for environmental controls or product safety,

but rather to provide for investigations to establish a scientific basis for protection of the public. Present techniques for micro-quantitation have achieved sensitivities that could only be remotely anticipated as recently as a decade ago.

Complementing the laboratory studies of some and as the point of origin of others will be a broad program of demography which will be accomplished through the application of epidemiological and statistical techniques. These studies will include descriptive, as well as analytical epidemiology, the former concerned with the assembly of data on variation in risk to environmentally determined or caused morbid states utilizing a broad spectrum of demographic variables (occupation, residence, age, sex, race, antecedent and concurrent disease, etc., etc.) Analytical epidemiology is concerned with the development of individually tailored protocols designed for the purpose of testing hypothesis on the nature of associations between environmental agents, host characteristics, and the patterns of environmental disease. Together these should permit the testing of ideas concerning the relationship of environmental factors to disease in man particularly in the ranges of low-level exposure where long-term, cumulative effects are the end points rather than the more obvious acute responses. The latter will certainly also be of important concern. Critical in the implementation of research in this area will be the identification and establishment of human population laboratories on a geographic, occupational, and other environmental bases.

Review and approval of grants

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	16	\$176,000	18	\$181,000	+2	+\$5,000
Other expenses.....		125,000		175,000		+50,000
Total.....	16	301,000	18	356,000	+2	+55,000

Introduction

Under the Associate Director for Extramural Research, this activity supports the scientific and administrative staff responsible for the review, negotiation, processing and awarding of all grants. The staff obtains complete information about all grant applications and, in cooperation with study groups, makes recommendations for the consideration of the council which recommends approval or disapproval of applications.

The scientific staff makes project site visits to grantee institutions to evaluate grant programs, survey manpower needs, determine with the administrative staff type and level of support, need for expansion of facilities, etc. Administrative and operational staff conduct financial reviews and arrange for liaison with their counterparts in the business office of grantee institutions.

The increase of \$55,000 includes \$28,000 to provide for two new clerical positions and supporting services. The remaining \$27,000 is an increase over 1967 for the centrally furnished services from the NIH Management Fund.

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits.....	10	\$108,000	10	\$123,000	0	+\$15,000
Other expenses.....		87,000		95,000	0	+8,000
Total.....	10	195,000	10	218,000		+23,000

Introduction

This activity supports the Director of the Division and scientific and administrative staff who assists in the planning, supervision and technical direction of the program.

The increase of \$23,000 includes \$15,000 for the annualization of positions new in 1967. The remaining \$8,000 provides for additional supplies and materials and an increase of \$6,000 for centrally furnished services for the NIH Management Fund.

New positions requested, fiscal year 1968

	Grade	Annual salary
RESEARCH		
Associate scientific director (1)	GS-17	\$22,760
Medical officer (2)	GS-16	40,150
Executive officer (1)	GS-16	20,075
Medical officer (2)	GS-15	36,314
Scientist (4)	GS-15	70,200
Statistician (1)	GS-15	17,550
Administrative officer (1)	GS-14	15,106
Medical officer (5)	GS-14	85,990
Engineer (1)	GS-14	15,106
Scientist (8)	GS-14	120,848
Mathematician (2)	GS-14	30,212
Statistician (1)	GS-14	15,106
Scientist (7)	GS-13	90,111
Administrative officer (1)	GS-13	12,873
Medical staff assistant (2)	GS-13	25,746
Statistician (1)	GS-13	12,873
Scientist (8)	GS-12	87,416
Statistician (1)	GS-12	10,927
Administrative officer (1)	GS-11	9,221
Scientist (12)	GS-11	110,652
Statistician (1)	GS-11	9,536
Research technologist (6)	GS-9	46,176
Medical staff assistant (1)	GS-9	7,696
Administrative assistant (1)	GS-9	7,696
Research technologist (10)	GS-7	64,510
Statistical assistant (1)	GS-7	6,451
Laboratory assistant (8)	GS-5	42,648
Clerical assistant (5)	GS-5	26,655
Laboratory assistant (5)	GS-4	23,880
Animal caretaker (4)	GS-3	17,076
Laboratory assistant (5)	GS-3	21,345
Animal caretaker (7)	GS-2	27,475
Laboratory assistant (2)	GS-2	7,850
Total (118)		1,158,230
REVIEW AND APPROVAL OF GRANTS		
Clerical assistant (1)	GS-4	4,776
Do. (1)	GS-3	4,269
Total (2)		9,045
Total new positions, all activities (120)		1,167,275

INTRODUCTION OF ASSOCIATES

Senator HILL. All right, Dr. Kotin, Environmental Health Sciences. Doctor, we are happy to have you here, sir.

Dr. KOTIN. It is a pleasure to be here, this morning, sir. I would like to introduce Mr. Kingman, my executive officer, and Mr. Bramlet, my budget officer.

Senator HILL. Nice to have you gentlemen, too, sir.

Go ahead, sir, in your own way.

HISTORY OF ESTABLISHMENT OF DIVISION

Dr. KOTIN. Mr. Chairman, and members of the committee, it is my privilege to appear before you on behalf of the newly created Division of Environmental Health Sciences. Since this is the first time an ap-

propriation request has been made for this organizational unit, I should like to give you some of the background leading to establishment of the Division.

The well-being of man is intimately linked with his environment. The complexity of the environment and the ways that it can influence man's health have been greatly enlarged as a result of population growth, urbanization, industrialization, and the multiplying use of chemical substances.

ENVIRONMENTAL CONTAMINATION

The once prominent problems of communicable disease have declined in urgency. In their stead we are now faced with problems related to contamination of our environment that threaten the health and character if not the very existence, of life forms.

The rewards of a rapidly advancing technology are large, tangible, and immediate. The penalties to be paid for this progress are somewhat removed in time and less visible, but clearly unavoidable.

There is little room for complacency in the notion that what does not show does not matter. It seems certain that unless we address ourselves forcefully to the health problems associated with our environment in this age of chemistry we shall inevitably suffer from the very advances that we are making.

CONTROL CAPABILITY

Senator HILL. We have been mighty slow to wake up to this situation, haven't we?

Dr. KOTIN. Yes, sir.

Senator HILL. I think we ought to have started this work when Selden invented the first automobile, or when they started pouring all this stuff into our streams. I come from a coal-producing State, so I have to be very careful.

Dr. KOTIN. I can appreciate that. But happily I think we are in a situation today where we can still bring things under control.

Senator HILL. Yes.

HEALTH HAZARDS

Dr. KOTIN. The growth of environmental contamination since the end of World War II has served to focus the attention of the Federal Government on this threat to health. Indeed, there is rising concern that environmental hazards, actual and potential, cannot only generate adverse effects on the health of individuals, but under certain circumstances can affect large segments of our population.

Such concern has been registered by several distinguished advisory groups which have called attention to the constantly changing patterns of environmental health problems and have recommended an expansion of research efforts in this field by the Public Health Service.

RECOMMENDATIONS OF COMMITTEE ON ENVIRONMENTAL HEALTH PROBLEMS

In November 1961, for example, a Committee on Environmental Health Problems under the chairmanship of Dr. Paul M. Gross recommended to the Surgeon General the creation of a Center including a new Office of Environmental Health Sciences.

Such an office, it was believed, would offer a new method for attacking those facets of environmental health problems that were common to many of the operational programs.

Moreover, it would permit by its integrated approach an identification and appraisal of problems that were not yet under consideration.

CENTRAL ENVIRONMENTAL HEALTH FACILITY

Congress appropriated funds in 1965 for planning a central environmental health facility, which would be devoted to the type of study envisaged by the Gross committee.

Following the recommendations of a site-selection committee, the Secretary of Health, Education, and Welfare announced in January 1965 that the Center would be located in the Research Triangle of North Carolina.

Advice on the mechanism for activating such an undertaking was subsequently obtained from a group drawn from the National Advisory Environmental Health Committee headed by Dr. Detlev W. Bronk.

Senator HILL. May I say he is one of the ablest men I have ever known, Bronk.

Dr. KOTIN. I could not agree with you more, sir.

This was followed in November 1965 by the report of a contract-supported study of plans for the Center's mission, scientific components, facility requirements, and staffing needs.

ESTABLISHMENT OF DIVISION OF ENVIRONMENTAL HEALTH SCIENCES

The Division of Environmental Health Sciences was established as part of the National Institutes of Health on November 1, 1966. As approved by the Secretary of Health, Education, and Welfare, the Division is to encompass a program of direct laboratory research and field studies in the North Carolina facility to be designated as the National Environmental Health Sciences Center.

Also to be included is a program of research and training grants to support non-Federal activity in relevant science areas and to sponsor the establishment of university centers for research and training.

Program activities, including ongoing grant supported projects, were transferred with the appropriate funds from the former Bureau of State Services to the new Division.

The Division's headquarters and the functions of program direction and development have also been located in North Carolina. Staff responsible for administering the Division's extramural operations is located in Bethesda.

MISSION AND GOALS

Organization and program in environmental health have in the past been oriented along one of these three axes: (1) The hazard, (2) the vehicle by which the hazard is transmitted, or (3) the particular population groups affected.

These singly are generally not conducive to the types of long-range investigations now considered necessary to identify the consequences of interaction of biological systems with hostile chemical and physical agents in the environment.

STUDY OF ENVIRONMENTAL EFFECTS

In this connection the need is twofold. First there must be vigorous and integrated study of all facets of environmental effects upon human health and productivity.

STUDY OF CONTROL MEASURES

Second, there is an overriding need to establish the basic information upon which realistic control measures can be devised and adjusted to continual changes in both the environment and the population.

Accordingly I see our mission as being directed toward providing a scientific base on which other units of the service, particularly the Bureau of Disease Prevention and Environmental Control, can effectively engage in surveillance, standard setting, control, and enforcement activities.

COOPERATION AND JOINT PROGRAMS

This will necessitate collaboration with other elements of the National Institutes of Health in joint programs. It will require, too, a high degree of cooperation with academic institutions in furthering understanding of the relationship of environment to health and in stimulating recruitment and training of research personnel.

INFORMATION REFERRAL POINTS

Implicit also in the overall mission is the early establishment of a referral point for scientific information involving Federal, State, and local programs; research organizations; and individual investigators.

RESEARCH

Research objectives will be oriented toward determining the mechanism by which environmental agents produce deleterious effects in exposed persons and the circumstances that influence the expression of these effects.

BODY RESPONSE

Interest will be focused upon the fundamental nature of the body's response to these agents, individually and collectively, and the ultimate consequence for health, longevity, and productivity.

In addition, the program will be geared to investigate and identify the opportunities that such basic knowledge may offer for counteracting the effects, increasing individual tolerance, protecting unusually susceptible segments of the population, and delineating the most effective points at which to exercise control.

ENVIRONMENTAL HAZARDS

Environmental hazards are ubiquitous and present relatively new types of health problems. Harmful agents—actual and potential—impinge upon man in intermittent or continuous doses and generally in low concentrations that reach him in a variety of ways.

It is the total and cumulative exposure of the individual to these environmental insults that is now recognized to be important, whether they reach him through air, water, food, or skin contamination.

DISEASE IDENTIFICATION

The situation is further complicated by the fact that the emergence of disease is frequently not identified clearly in a cause and effect relationship with individual environmental toxicants.

A striking example of an exception is the effect of betanaphthylamine, a dye, in producing bladder cancer in dye industry workers.

Identification of causes is not limited to new agents. The substitution of one agent by another or the addition of another agent can create new complexity and new problems.

The addition of nickel as well as lead to gasoline and the use of plastics and/or fibers as well as asbestos in insulating materials are cases in point.

CHEMICAL TOXIC EFFECTS

Furthermore, the toxic effects of certain chemicals are multiplied many times by the simultaneous presence of another substance—a synergistic effect.

The economic cost of these ill defined debilities has never been satisfactorily determined, but it clearly includes the care of the prematurely disabled, the nonproductivity of the partially effective, the diversion of medical services from the treatment of less avoidable disease, and a general reduction of effective effort through constant interruption and replacement of personnel.

CAUSAL DISCOVERY AND CONTROL

A social cost linked with less than optimum environments is the increasing public dissatisfaction with things as they are. Standards of acceptance are everywhere rising, with a corresponding increase in demand that something be done about the vague, chronic ill health that so long has come to be regarded as the inevitable lot of those past middle age.

The belief is developing that causes can be discovered and controlled and that the multiple, minor, and repeated environmental insults we have unwittingly brought upon ourselves are major contributors to this ill health, be it bronchitis, heart trouble, rheumatism, or just plain fatigue.

PROGRAM CONTENT

We are moving to then attack these newer environmental health problems with a broad multidisciplinary approach and through use of multiple program mechanisms. The provision of a cohesive framework for such activities will be a major objective of the Division.

RESEARCH AND TRAINING

The extramural program will provide funds for the support of research and training activities within educational institutions, research institutes, and other public and private nonprofit facilities.

This will permit these facilities to play a key role in stimulating and expanding investigations in areas of relevance to the mission and goals of the Division.

Support will be provided for research which ranges from small and circumscribed projects to broad and composite programs that integrate the research skills and efforts of investigators with diverse training.

GRANTS

Grants administered by the Division have already made possible the establishment of university centers for research and training. These programs embrace numerous facets of environmental health research—clinical and nonclinical activity, routine work and highly original studies, investigations by individuals and by teams, field studies, and so forth.

ADVANCED TRAINING

The centers also permit advanced training in environmental health research in a depth and scope that are relatively unavailable elsewhere.

EXTRAMURAL AND INTRAMURAL RESEARCH

It is anticipated that the extramural research program will represent by far the major portion of the total national program in the area of environmental health. To this end the initial efforts of the senior staff of the Division have in significant measure been devoted to reviewing and establishing on a firm basis the ongoing and planned extramural research activities with emphasis on need, relevance, and pertinence as well as quality.

In the intramural program laboratory, studies will be directed to duplicating circumstances of human exposure in experimental models, taking into account such factors as portal of entry, naturally occurring concentrations of environmental agents, a time phasing of exposure sequences, and multiplicity of agents.

Considerable attention will be directed to the long neglected questions of the way in which agents operate together either in reinforcing or antagonistic fashion, the significance of dosage rate and frequency in relation to the total life span, and the deleterious effects of situations, such as that of smoking.

I believe that inattention to these problems would certainly lead to an increase in disability. This might become apparent in higher attack rates of cancer, cardiovascular, and pulmonary disease.

Moreover, I would not be surprised to find that again many of the factors associated with acceleration of chronic disease may be seen in retrospect to have been appreciably influenced by currently unrecognized factors in the environment.

Senator HILL. Factors we don't now recognize.

Dr. KOTIN. We have ample historical precedent to indicate that this could very well be the case.

Senator HILL. Yes.

CONTAMINATION SOURCE INCREASE

Dr. KOTIN. The increase in sources of contamination the introduction of numerous synthetic agents into the environment, and the growing recognition of the toxicity of certain natural products makes individual bioassay of every possible agent manifestly impossible. It is essential, therefore, that we develop the principles on which the probable toxicity of new, as well as existing, contaminants can be predicted and appropriate measures taken.

ORGANIZATION AND STAFFING

One of the earliest needs in the organization has been to complete the administrative organization, the staffing pattern, and the advisory and liaison structure of the division.

We have succeeded to date in recruiting the key members of the scientific management team and support personnel.

In addition, we have established a formal liaison mechanism between the Division and those units of the Service responsible for developing methods of control and protection from environmental hazards.

This arrangement is for the purpose of acquainting the Division with operational problems on which further research is needed and making the other units aware of scientific information that is available for developing action programs.

EXTERNAL ADVISORY COMMITTEE

Finally, an external advisory committee has been established to consult on general program and policy issues in the field of environmental health sciences.

This group, which will have its initial meeting late in the spring of 1967—actually it will be June 2—will also conduct periodic review of the Division's intramural and extramural research programs and will advise on research priorities and allocation of resources.

BUDGET REQUEST

For these activities and programs which I have outlined, Mr. Chairman, we propose a budget of \$20,615,000 and an increase of \$7.3 million over the \$13.3 million available in 1967. The \$20,615,000 includes \$10,421,000 for research grants, \$5,545,000 for training grants, and \$4,649,000 for direct operations.

I shall be happy to answer any questions.

DEPARTMENTAL AND BUREAU OF THE BUDGET REDUCTIONS

Senator HILL. You got some reduction, both by the Department and by the Budget Bureau, did you not, in your original estimate to the Department?

Dr. KOTIN. Yes, sir.

Senator HILL. What would be the effect of this reduction?

Dr. KOTIN. I think the effect of the reduction would essentially be a slowing of the pattern of implementation of the program. I think the reduction, if one can turn back the clock a bit, could have reasonably been predicated on some question as to our ability to staff as rapidly as indeed time has proven we could, and to develop program on the basis of the many foundations that exist, both within Government and within university centers, so that what might have been then reasonable, certainly, I think now, could well be reappraised.

Senator HILL. In other words, you feel now that you can achieve the rate of growth in your staff that is provided as the funds provide for in the budget estimate?

Dr. KOTIN. I do, sir.

Senator HILL. Of course, I guess the budget arrived at its figures way back last fall, didn't it?

Dr. KOTIN. Yes, sir.

Senator HILL. Some 6, 7, or 8 months ago. You feel pretty sure you can certainly make good use of what the budget has.

Dr. KOTIN. I really do, sir, when one thinks that 6 or 8 months ago we were not really a viable entity within the framework of the National Institutes of Health as we are today.

PERSONNEL RECRUITMENT

Senator HILL. You don't see any particular difficulty in filing the requested increase in positions?

Dr. KOTIN. Oh, I see difficulties, but I think they are difficulties that can be overcome. I would not want to create the impression that it is going to be easy to do this, or that the efforts in the past have been accomplished with ease. However, I think with the help that we have been getting, our fortunate geographic location, and the academic and research environment as well as the cultural environment that the research triangle provides we can attain our goals. At the beginning we could not gauge the impact of our location on our recruiting. At this time I can say for the record that it has been a significant help in recruiting.

Senator HILL. It has been significant.

Dr. KOTIN. Yes, sir.

UNIVERSITY-BASED RESEARCH AND TRAINING CENTER

Senator HILL. How did the concept of a university-based research and training center for environmental health develop?

Dr. KOTIN. It was recognized early that the environmental health center and the division itself could never meet more than a small portion of the total national need.

Senator HILL. Yes.

Dr. KOTIN. It was also recognized that a great reservoir of talent was available in the universities and research institutes across the country. These in the absence of a focal point to which to relate, which the division now provides, essentially represented scientists pursuing problems in environmental health on the basis of their own interests, within the framework of their own disciplinary background.

We felt that given an opportunity, these scientists would want to coalesce into centers which would of course uniquely meet the problems which the Division faces. As I indicated in my opening statement, the problems we face are so myriad that if we can identify those which are being successfully pursued through existing programs and facilitate the expansion of those programs in the universities, the Division can concern itself with filling gaps which will continue to exist. In addition the Division can serve as a hub from which the various programs will radiate, based on an assessment of national need. I believe the Division has as a primary responsibility the need to be responsive to total national need. Indeed then, the centers are integral to the program of the Division as though they were all resident within the triangle itself.

GRANT SUPPORTED PROGRAM

Senator HILL. I agree. You speak about needs. What specific needs are these grant supported programs intended to meet? You outline them generally in your statement.

TRAINING

Dr. KOTIN. They will meet several needs. First of all, they will provide a base for the training of personnel in environmental health sciences.

Senator HILL. Yes.

Dr. KOTIN. The environmental health sciences really have no fundamental disciplines of their own. What they do, and what the area requires, is the attraction of scientists in various areas to apply their discipline training, skills, and experience to problems in environmental health.

Within the traditional framework of the university or the medical school, there really is no department of environmental health sciences equivalent to a department of medicine of a medical school or a department of sociology in a school of liberal arts.

In our fields the Division will serve as the focal point, so it will meet the training needs of the field, it will meet the need for a multifaceted attack. In my opening statement I tried to emphasize that one of the things that the Division will attempt to provide over and above the many important and effective environmental research programs within the Federal Government is the relating of these problems to man and his well-being. Man is exposed to very complex series of environmental experiences, some good, some bad; and all occurring simultaneously.

Man is exposed to air, water, and food, at the same time. Man is exposed to natural and synthetic chemicals at the same time.

Man is ultimately healthy and less than healthy in sequence. In the past there has been no focal point for man and his environment and even at present I don't think it is feasible in relation to the urgency of the need for the Division to attempt to respond to all of man's needs in relation to his environment. In summary, then, the Institutes will provide the training so important for the environmental health sciences, they will provide the multidisciplinary and multicategorical approaches so important to this field, and will, in collaboration with the Division, provide a national focus in this area of critical national need and urgency.

EDUCATION AND EXPERIENCE OF DR. KOTIN

Senator HILL. Well, Doctor, what were you doing before you took over this work?

Dr. KOTIN. I was scientific director for etiology in the National Cancer Institute.

Senator HILL. That is what I thought. You were in the cancer institute, weren't you?

Dr. KOTIN. Yes, sir.

Senator HILL. And that was Dr. Endicott.

Dr. KOTIN. With Dr. Endicott.

Senator HILL. Where did you go to school, if I may ask?

Dr. KOTIN. The University of Illinois. I am from the Prairie State.

Senator HILL. I thought you were going to say you were from Abraham Lincoln's State.

Dr. KOTIN. Well, he was born in Kentucky. They tried to teach me differently in school, but I was 15 years old before I found out otherwise. [Laughter.]

LEARNING ABOUT MEN FROM THEIR SPEECHES

Senator HILL. Yes. Well, I have often thought, if you want to know just what man is, here, hear what he says about some other man, see. If you want to know about Woodrow Wilson, you want to read the speech that he made when they dedicated—they built a sort of a marble encasement of the home, there, where Abraham Lincoln was born in Kentucky, at Hodgkinsville, Ky. Wilson made that speech.

Now if you want to know about Wilson, you go read his speech he made there on Abraham Lincoln.

Dr. KOTIN. I would agree.

Senator HILL. That would be scientific. [Laughter.]

Dr. KOTIN. And I am sure he made other speeches, so we could almost have a controlled experiment, by comparing with the speeches he made about other people.

Senator HILL. Exactly. It is certainly true. Have you ever visited the old place there where Mr. Lincoln was born?

Dr. KOTIN. Yes, sir.

Senator HILL. Of course you got there after Wilson made that speech, because that was a good many years ago.

Dr. KOTIN. I was around at the time, but I don't remember it.

Senator HILL. I see. Were you born in Kentucky, you say?

Dr. KOTIN. No; I was born in Illinois, in Chicago.

Senator HILL. In Chicago?

Dr. KOTIN. Yes, sir.

NAMING OF CHICAGO

Senator HILL. You know where Chicago got its name, don't you?

Dr. KOTIN. That is an Indian name.

Senator HILL. That isn't the way—

Dr. KOTIN. You mean they have been fooling me in that area, too, in schools? [Laughter.]

Senator HILL. You know the way I heard it, Dr. Kotin, some of the other pioneer fathers came over here and did not have enough money to bring their wives, I will tell you how Chauncey Depew said it got its name. Chauncey Depew was a very distinguished Senator in New York and quite a speaker, he said these founding fathers, after they made two or three crops and got some money, sent back to bring their wives over, and a number of them were standing there on the shore of Lake Michigan and one of them saw this ship coming down the shore and he said, "Ah, there comes the she-cargo." [Laughter.]

And that was Senator Chauncey Depew's story. I don't know.

Dr. Shannon, anything you would like to add?

Dr. SHANNON. No, sir.

Senator HILL. How about you, Dr. Stewart?

PROTECTION OF PEOPLE IN THEIR ENVIRONMENT

Dr. STEWART. Senator Hill, I would just emphasize what Dr. Kotin has said, that the establishment of this division as scientific base for our efforts at protecting people in their environment is a key to our total program in environmental health.

It has been the missing link for some time, and I think that it is highly significant that we now have it established. We are very grateful we have Dr. Kotin as the Director of it. We are looking forward to real contributions.

DISEASE PREVENTION

Senator HILL. Well, we talked a good deal here in the last several days about what we had done to wipe out these infections, communicable diseases. Now in the field you are going to wipe out a lot of other troubles, aren't you?

Dr. KOTIN. In the same way, sir, by preventing them.

Senator HILL. Preventing them. You remember what Ralph Waldo Emerson said, don't you? "An institution is the lengthened shadow of one man," and you are that man, now, in this environmental field.

We want to thank you for a splendid statement, Doctor. We appreciate it, appreciate the fine work that you are doing.

Dr. KOTIN. It is a privilege to appear before you, sir.

Senator HILL. We appreciate having you very, very much.

DIVISION OF ENVIRONMENTAL HEALTH SCIENCES

INTRAMURAL RESEARCH

The intramural program of the Division is the focal point of a nationwide, collaborative study of problems of environmental health. The scope of the research is broad and program direction has several goals:

1. The development of experimental methodologies, both laboratory and demographic, to meet research needs which cannot be met by traditional approaches.

2. Definition of the problems involved in the solution of questions of environmental health. The nature of these problems involved in a particular question must, collectively, determine the guidelines for protocol design and research pursuit. A problem-solving basis for research facilitates the simultaneous use of diverse disciplinary and categorical approaches and the constant monitoring of progress. It also assures that significant areas are not being neglected by default.

3. Maintenance of a flexible program with provision for the continual parallel assessment of laboratory data and epidemiological data. The significance of each in relation to the other must be under constant review to assure maximum benefit to both.

There is ample reason to believe that the integration of disciplines and the constant scientific interchange inherent in the problem-solving approach can be as successful in biological research as it has been in other fields. The unprecedented accomplishments in the physical sciences have been achieved in large measure through the marriage of disciplines on problem-solving teams. Industry has long and successful experience in the use of this technique. The National Environmental Health Sciences Center, in contrast to the traditional academic structure institutions, is organized for an inter-disciplinary approach which will accumulate and apply data derived from all sources—in-house studies, university centers, and the scientific community in general—which can be expected to provide complementary information.

The functional approach by groups of scientists makes it easier to launch new activities than the more usual organization of operational units based on the research interests of individual scientists or on traditional scientific disciplines. The functional organization has also greatly facilitated recruiting for the new program.

Recruiting has been more successful than might reasonably have been expected. The national importance of the problems with which the Center is concerned and the broad inter-disciplinary approach to them that is being developed makes the Center an attractive place for scientists to work. The Division has commitments from outstanding candidates for all its key research posts.

The Center is now housed in four laboratory buildings, an administrative building and a service building which total about 26,000 square feet. An additional 11,000 square feet of office space will be made available to the Division during FY 1968. This will permit the planned expansion of biometric and epidemiological activities and will also free some laboratory space that is now temporarily occupied by office staff.

The original agreement with the Research Triangle Foundation stipulates that an additional 30,000 square feet (net) will be built for and leased to the Division when needed. As the need can now be clearly foreseen, negotiations are under way for acquiring this additional space. It should be available in about a year and will expand the Center's facilities to accommodate a total staff of about 200.

The Center will be only one segment of a nationwide effort. An equally important function of the Division is to support extramural research through grants-in-aid and contracts. For the latter, project officers must be active scientists of high caliber who are sympathetic to a programed approach to problem-solving research. It should be emphasized that "programed" research does not, *per se*, assure the quality of the work, but it does attempt to establish in advance, the contribution that any given research effort may be expected to make to the solution of a problem.

THE NEED FOR UNIVERSITY BASED INSTITUTES/CENTERS

Beginning with the report of the Gross Committee in 1961, the need for the establishment of research and training centers in universities has been repeatedly documented; most recently at the Airlie House Conference on "Educational Needs in Environmental Health," sponsored by the NAS/NRC.

The establishment of institutes/centers in academic settings will meet two major needs in the pursuit of studies in environmental health. First, the centers will serve as a resource for the development of scientific manpower to meet national needs in this area of growing complexity and importance; and second, the magnitude of the problems we are facing makes it essential that the resources of the scientific community be involved to the maximum extent possible so as to assure the earliest and most effective resolution of problems in the area of environmental health.

I. *The Rationale for Institutes/Centers*

1. Centers develop in a pattern of diversity as an outgrowth of a university's particular resources and strengths, and partially in response to the specific types of environmental health problems encountered in the locality or region.

2. The dominant orientation of a Center's program reflects interests and competencies of key personnel. The objectives and distribution of effort from the internal viewpoint are not determined by a hierarchy of priorities or the need to fill gap areas that are essential but perhaps pedestrian, etc., but rather by self-generated interest and available competencies.

3. Centers will vary in size and composition. No individual center can embrace effectively more than a few aspects of the broad and complex field of environmental health. Establishment of centers permits a diversity of scope and approaches.

4. The funding of centers is relatively modest, permitting support of program direction, common use of expensive equipment, and core facilities. Virtually all research and teaching personnel associated with the center retain titles and positions in their respective departments.

5. Research supported by the center grant is largely exploratory and often is replaced by project support which is separately sought through regular competing channels.

6. The center grant permits training in a breadth that does not exist elsewhere in traditional university environments. Seminars, colloquia, integration of scattered university schools, departments, and resources make this broadening possible, while retaining traditional disciplinary training in depth.

7. The incorporation of environmental health concepts in various curricula may serve to enrich and broaden the outlook of other graduate students who do not plan to engage directly in environmental health-related activities on completion of training.

8. Since there are no sciences that have a peculiar or unique relevance to environmental health, the university center provides an effective mechanism for coordinating the contributions each discipline can make to a study of interactions of various agents with biological systems.

II. *Relationship of the University Centers to the National Environmental Health Sciences Center (NEHSC)*

1. The NEHSC will never attain a scope and size for investigating more than a portion of the broad spectrum of environmental health problems, and this requires broadly based university centers to carry out specific components of the programs.

2. As part of the grants approach to studies related to environmental health, academic centers help to insure a wide variety of research and a continuing supply of new leads, new knowledge, new concepts, new techniques, and new methodologies. Coordinated research efforts in the past have been difficult to achieve owing to the tradition of academic freedom for the independent investigator. Individual grants, though fully capable of meeting the substance of specific research approaches are not primarily structured to meet specific program needs.

3. Research in academic centers cannot supplant the need for planned, integrated, targeted research. In programmatic research of the type contemplated for the NEHSC, Government staff identifies mission-oriented problem areas, formulates objectives, and implements program efforts in centrally coordinated manner.

4. Effective utilization of decentralized national resources requires the existence of an intramural activity that is sufficient in depth, breadth and excellence to evaluate, review, and maintain working relationships with external programs. We are building into the NEHSC the problem-solving competence and facilities required for such management.

III. *The Need for Institutes/Centers in the Academic Community*

1. Environmental technology has not established a close and enduring association with the physical and biomedical sciences, mathematics, and social sciences. This lack of integration of environmental technology with an underlying science base has obstructed its development.

2. In depth of knowledge and research experience in the contributory scientific disciplines, there is a substantial deficit in the Nation's supply of career investigators in environmental health who have insight into the interdisciplinary demands of environmental problems and who can communicate with the various specialists in the field.

3. Within the present pattern of university training, it does not appear possible in the foreseeable future to produce a body of highly qualified scientists who are primarily engaged in environmental health.

4. An interdisciplinary approach will not materialize by mere physical adjacency of scientists from different fields. Such groups must be structured for the precise purpose of achieving joint operational approaches and true scientific interaction. The university-based research and training center provides a framework for focusing, inter-relating, and sustaining the various disciplines needed to analyze the importance and interdependence of variables in complex problems of environmental health.

GENERAL RESEARCH AND SERVICES

STATEMENT OF DR. JAMES A. SHANNON, DIRECTOR, NATIONAL INSTITUTES OF HEALTH; DR. THOMAS J. KENNEDY, JR., DIRECTOR, DIVISION OF RESEARCH FACILITIES AND RESOURCES; JOHN DEVIerno, EXECUTIVE OFFICER, DIVISION OF RESEARCH FACILITIES AND RESOURCES; BERTIL BERGQUIST, BUDGET OFFICER, DIVISION OF RESEARCH FACILITIES AND RESOURCES; DR. FRANCIS L. SCHMEHL, CHIEF, HEALTH RESEARCH FACILITIES BRANCH, DIVISION OF RESEARCH FACILITIES AND RESOURCES; DR. HEINZ SPECHT, DIRECTOR, OFFICE OF INTERNATIONAL RESEARCH; DR. ARNOLD W. PRATT, DIRECTOR, DIVISION OF COMPUTER RESEARCH AND TECHNOLOGY; POSEY B. HOWELL, JR., EXECUTIVE OFFICER, DIVISION OF COMPUTER RESEARCH AND TECHNOLOGY; RICHARD L. SEGCEL, EXECUTIVE OFFICER, NATIONAL INSTITUTES OF HEALTH; LELAND B. MAY, ACTING FINANCIAL MANAGEMENT OFFICER, NATIONAL INSTITUTES OF HEALTH; DR. WILLIAM H. STEWART, SURGEON GENERAL; CHARLES MILLER, CHIEF FINANCE OFFICER; AND JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

APPROPRIATION ESTIMATE

GENERAL RESEARCH AND SERVICES, NATIONAL INSTITUTES OF HEALTH

For the activities of the National Institutes of Health, not otherwise provided for, including research fellowships and grants for research projects and training grants pursuant to section 301 of the Act; and grants of therapeutic and chemical substances for demonstrations and research; **[\$68,534,000]** \$81,141,000: *Provided*, That funds advanced to the National Institutes of Health management fund from appropriations included in this Act shall be available for purchase of not to exceed **[five]** *twelve* passenger motor vehicles for replacement only; and not to exceed \$2,500 for entertainment of visiting scientists when specifically approved by the Surgeon General.

APPROPRIATION LANGUAGE CHANGE

The change recommended for 1968 is authority for the purchase of 12 passenger motor vehicles for replacement only.

For replacement:

Motor vehicle tag nos.	Year	Location	Mileage	Purpose
Passenger cars:				
HW 3811.....	1962	Bethesda, Md.....	61,000	Research personnel and research patients: collecting data and material and transportation to and from points where public transportation is not adequately available.
HW 3812.....	1962	do.....	61,000	
HW 3813.....	1962	do.....	61,000	
HW 3814.....	1962	do.....	60,000	
HW 3815.....	1962	do.....	65,000	
HW 3816.....	1962	do.....	62,000	
HW 3817.....	1962	do.....	62,000	
HW 4063.....	1963	do.....	63,000	
Station wagons:				
HW 4064.....	1963	do.....	63,000	
HW 4065.....	1963	do.....	73,000	
HW 4066.....	1963	do.....	73,000	
HW 4067.....	1963	do.....	72,000	

2090 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

GENERAL RESEARCH AND SERVICES, NATIONAL INSTITUTES OF HEALTH

Amounts available for obligation

	1967	1968
Appropriation.....	\$68,534,000	\$81,141,000
Comparative transfers within NIH accounts.....	-153,000	
Comparative transfer from NIAMD.....	3,000,000	
Comparative transfer from NIAMD.....	600,000	
Transfer to "Operating expenses, Public Building Services," General Services Administration.....	-13,000	
Total.....	71,968,000	81,141,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Office of International Research.....	81	\$11,616,000	81	\$14,105,000	-----	\$2,489,000
Division of Computer Research and Technology.....	89	3,767,000	104	4,675,000	+15	908,000
Engineering development.....	6	348,000	6	347,000	-----	-1,000
Division of Research Facilities and Resources.....	153	55,969,000	158	62,014,000	+5	6,045,000
Total obligations.....	329	71,700,000	349	81,141,000	+20	9,441,000
GRANTS						
Research.....		\$58,625,000		\$66,364,000	-----	\$7,739,000
General research support.....		(53,000)		(659,000)	-----	(606,000)
Scientific evaluation.....		(325,000)		(325,000)	-----	
International centers for medical research and training.....		(2,800,000)		(2,800,000)	-----	
General clinical research centers.....		(28,463,000)		(30,443,000)	-----	(1,980,000)
Special resource centers.....		(10,850,000)		(10,850,000)	-----	
Animal resources.....		(3,100,000)		(5,100,000)	-----	(2,000,000)
Primate centers.....		(9,000,000)		(10,500,000)	-----	(1,500,000)
Fellowships.....		1,300,000		1,580,000	-----	280,000
Training.....		250,000		318,000	-----	68,000
DIRECT OPERATIONS						
Collaborative research and development.....	2	1,766,000	2	1,991,000	-----	225,000
International research.....	71	3,326,000	71	3,372,000	-----	46,000
Computer research and technology.....	89	3,767,000	104	4,675,000	+15	908,000
Training activities.....	10	183,000	10	187,000	-----	4,000
Review and approval of grants.....	116	1,395,000	119	1,511,000	+3	116,000
Program direction.....	41	1,088,000	43	1,143,000	+2	55,000
Total obligations.....	329	71,700,000	349	81,141,000	+20	9,441,000
Unobligated balance, reserve.....		268,000			-----	-268,000
Total.....	329	71,968,000	349	81,141,000	+20	9,173,000

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions.....	329	349	+20
Full-time equivalent of all other positions.....	16	16	-----
Average number of all employees.....	291	338	+47
11 Personnel compensation:			
Permanent positions.....	\$2,938,000	\$3,346,000	+\$408,000
Positions other than permanent.....	176,000	193,000	+17,000
Other personnel compensation.....	11,000	12,000	+1,000
Total personnel compensation.....	3,125,000	3,551,000	+426,000
12 Personnel benefits.....	356,000	399,000	+43,000
21 Travel and transportation of persons.....	766,000	792,000	+26,000
22 Transportation of things.....	81,000	83,000	+2,000
23 Rent, communications, and utilities.....	231,000	287,000	+56,000
24 Printing and reproduction.....	71,000	74,000	+3,000
25 Other services.....	3,160,000	3,441,000	+281,000
Project contracts.....	1,603,000	1,816,000	+213,000
Payment to "National Institutes of Health manage- ment fund".....	742,000	818,000	+76,000
26 Supplies and materials.....	98,000	123,000	+25,000
31 Equipment.....	1,292,000	1,495,000	+203,000
41 Grants, subsidies, and contributions.....	60,175,000	68,262,000	+8,087,000
Total, obligations by object.....	71,700,000	81,141,000	+9,441,000

Summary of changes

1967 enacted appropriation.....	\$68,534,000
Unobligated balance, reserve.....	—268,000
Comparative transfers to/from other accounts.....	—153,000
Comparative transfer from NIAMD.....	+600,000
Comparative transfer from NIAID.....	+3,000,000
Transferred to "Operating expenses, Public Buildings Service," Gen- eral Services Administration.....	—13,000
1967 total estimated obligations.....	71,700,000
1968 estimated obligations.....	81,141,000
Total change.....	+9,441,000

2092 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

	Base		Changes from base	
	Pos- itions	Amount	Pos- itions	Amount
INCREASES				
A. Built-in:				
1. Annualization of new positions authorized in 1967.....				\$158,000
B. Program:				
1. Research grants.....		\$58,625,000		7,739,000
2. Fellowships.....		1,300,000		280,000
3. Training.....		250,000		68,000
4. Collaborative research and development.....	2	1,763,000		226,000
5. International research.....	71	3,209,000		22,000
6. Computer research and technology.....	89	3,646,000	15	752,000
7. Training activities.....	10	169,000		3,000
8. Review and approval.....	116	1,236,000	3	99,000
9. Program direction.....	41	760,000	2	35,000
C. Payment to "National Institutes of Health management fund" for centrally furnished services:				
1. Collaborative research and development.....		3,000		
2. International research.....		117,000		12,000
3. Computer research and technology.....		121,000		30,000
4. Training activities.....		14,000		1,000
5. Review and approval.....		159,000		17,000
6. Program direction.....		328,000		16,000
Total program increases.....			20	9,300,000
DECREASES				
A. 1 less day of pay in 1968.....				-17,000
Total decreases.....				-17,000
Total net changes requested.....			20	9,441,000

EXPLANATION OF CHANGES

Research grants.—The increase of \$7,739,000 includes \$1,653,000 for regular research grants, \$606,000 for general research support grants, \$1,980,000 for general clinical research centers, \$2,000,000 for animal resources, and \$1,500,000 for primate centers.

Fellowships.—\$100,000 of the total increase of \$280,000 will provide support for 10 existing and eight new postdoctoral fellowships for the Division of Research Facilities and Resources. This Division first began their fellowship program in 1967. The remaining \$180,000 will be utilized by the Office of International Research to increase the annual stipend level and to increase the total number of their fellowships to 170.

Training grants.—The increase of \$68,000 will provide support for two new grants affording training to approximately 30 graduate students. This training program was new to the Division of Research Facilities and Resources in 1967.

Collaborative research and development.—The increase of \$226,000 provides support for further development of the Pharmacology-Toxicology information program and includes a small amount (\$35,000) for contracts for special research resources.

International research.—The increase of \$22,000 will provide funds for increased operating costs.

Computer research and technology.—The increase of \$752,000 and 15 positions will provide: additional depth and technical support in biological, physical and behavioral sciences as they relate to the mathematics and statistics of computer technology, for research in pattern recognition through the use of optical scanning devices, and for development of a natural language processing system.

Training activities.—The \$3,000 increase provides for increased operational costs.

Review and approval.—The increase of \$99,000 and three positions are needed for the administration of the several grant programs, and for the processing and fiscal management of grants.

Program direction.—The increase of \$35,000 and two positions will provide additional staff required for over-all administration, planning and evaluation.

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 2093

Explanation of transfers

	1967 estimate	Purpose
Transfer to: "Operating expenses. Public Buildings Service," General Services Administration.	-\$13,000	Transfer of rental costs to GSA.
Comparative transfer to: Other NIH accounts.....	-153,000	Redistribution of the National Institutes of Health management fund.
Comparative transfer from:		
NIAMD.....	+600,000	For the United States-Japan program.
NIAID.....	+3,000,000	

OFFICE OF INTERNATIONAL RESEARCH

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants:						
Research.....		\$6,907,000		\$9,166,000		+\$2,259,000
International centers for medical research and training.....		(2,800,000)		(2,800,000)		
Fellowships (international post doctoral).....		1,200,000		1,380,000		+180,000
Direct operations:						
International research.....	71	3,326,000	71	3,372,000	0	+46,000
Training activities.....	10	183,000	10	187,000	0	+4,000
Total obligations.....	81	11,616,000	81	14,105,000	0	+2,489,000

Research grants

	1967 estimate	1968 estimate	Increase or decrease
Regular projects.....	\$4,034,000	\$5,687,000	+\$1,653,000
Special program.....	2,873,000	3,479,000	+606,000
Total research grants.....	6,907,000	9,166,000	+2,259,000

	1967 estimate	1968 estimate	Increase or decrease
Research project grants to former international postdoctoral fellows.....	\$434,000	\$587,000	+\$153,000

INTRODUCTION

This program has been designed to facilitate optimum utilization of research training received in the United States by promising young foreign biomedical investigators previously supported by NIH international Postdoctoral Fellowships. The program provides some of the resources needed by these highly talented and carefully selected individuals in commencing independent research careers in their home countries. The applications for modest research project grants, limited ordinarily to \$2,500 for each of three years and not renewable, receive careful review by both the International Fellowship Review Panel and the National Advisory Health Council. The grants usually provide for subprofessional technical assistance, equipment and supplies, and serve not only to protect the training investment made in the foreign scientist by encouraging the inauguration of his independent research career on return to the home country, but also to stimulate continuation and development of a productive collaborative relation-

ship begun earlier between the Fellow and his American preceptor. In many cases, Fellows develop a fresh interest in problems which are of pressing and immediate concern to the health of the American people and are strongly motivated to continue efforts along these lines following completion of their training in the United States. These grants promote such efforts. Furthermore it is becoming increasingly clear that progress in the health sciences recognizes no national boundaries, and all nations share in the afflictions common to all and therefore as a matter of self-interest are compelled to show concern for and activities directed toward solution of common health problems. This program, along with the international fellowship program supports research and training in *all* the related sciences ranging from heart disease to cancer, chronic infectious diseases, nutritional and metabolic problems, epidemiology of mental and behavioral disorders, development of new surgical techniques, understanding of the genetic basis for health and development, and community and environmental health problems.

PROGRAMS PLANS IN 1967 AND 1968

This Program and its closely related foreign fellowship program are useful and important devices for building and improving scientific communication between the United States biomedical science community and its counterparts in other countries. In 1967, 154 awards will be made for a total \$454,000. The 1968 estimate will support 215 awards for \$587,000.

	1967 estimate	1968 estimate	Increase or decrease
Research project grants (U.S.-Japan program)-----	\$3, 600, 000	\$5, 100, 000	+\$1, 500, 000

INTRODUCTION

In 1966 President Johnson and Prime Minister Sato, mindful of the many areas of human health which are of mutual concern to the peoples of the U.S. and Japan agreed to undertake a greatly expanded program of cooperation in medical science. As a first step to implement this agreement, they agreed to convene a conference of the foremost medical scientists from the United States and Japan to work out the details of the new program. The U.S.-Japanese Joint Planning Committee held a planning conference in Tokyo. This was followed by a Joint Committee Meeting in Honolulu during October 4-7, 1965 and subsequently in Hakone, Japan during August 17-19, 1966.

The program is concerned with the diseases of mutual importance to the health of the peoples of the U.S. and Japan. These diseases or categories of diseases include: cholera, tuberculosis, leprosy, virus diseases (arbovirus, respiratory virus, smallpox, and rabies), parasitic diseases (schistosomiasis and filariasis), and malnutrition.

Primary emphasis is placed on medical research as the basis for advanced knowledge necessary to effective action. Field research may be undertaken when deemed necessary or desirable but primary emphasis is on laboratory research.

The United States and Japanese Governments have appointed members to constitute a U.S.-Japan Cooperative Medical Science Committee. The United States delegation to this Committee is appointed by the Secretary of State for a period no to exceed four years. The delegation, in addition to representing the U.S. at meetings of the Joint Committee, advises the Secretary of State on the scope, direction and other broad aspects of the program and develops plans and proposals to assure that the program meets all the purposes for which it was established. It has designated the six areas of research mentioned above and established Panels in each disease category to implement the research program.

Appointments to Panels have been made by the Director, NIH, and each Panel consists of five members. Consultants may be nominated by each Panel for appointment by the Committee in keeping with the scientific requirements.

The United States and Japan maintain separate secretariats. The Office of International Research, National Institutes of Health, functions as the U.S. secretariat.

The United States and Japan share the costs of the program. Projects of U.S. scientists are supported by the United States and those of the Japanese scientists by Japan.

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 2095

The National Institutes of Health, based on the availability of funds and delegated authority under P.L. 86-610, provides for the support of scientific projects, is responsible for the organization, funding, and conduct of all scientific meetings held in the United States, provides financial support to the United States Panel members, consultants for attendance at meetings related to the U.S.-Japan C.M.S. Program, and provides and funds the U.S. secretariat.

PROGRAM PLANS IN 1967 AND 1968

The allowance of \$3,600,000 for grants in 1967 will provide for approximately 113 research grants in the areas of cholera, leprosy, tuberculosis, virus diseases, infectious diseases and malnutrition. The requested amount of \$5,100,000 in 1968 will provide for the continuation of these 113 research grants started in 1967 and the provision for about 89 new research project grants.

The increase in total regular research grants resulting largely from the transfer of the U.S.-Japan program to OIR leads to the increase of \$606,000 for the general research support grants program.

	1967 estimate	1968 estimate	Increase or decrease
International centers for medical research and training.....	\$2, 800, 000	\$2, 800, 000	-----

INTRODUCTION

International Centers for Medical Research and Training (ICMRT) promote collaborative research and research training between U.S. universities and selected foreign institutions and investigators. Five International Centers now in operation provide unusual field experience and exceptional biomedical research opportunities for American physicians and scientists. These university-sponsored Centers derive their financial support from research grants awarded by the National Institutes of Health. The five universities and their overseas affiliates are as follows:

<i>U.S. University</i>	<i>Foreign Affiliate Institution</i>
Johns Hopkins University-----	All India Institute of Hygiene and Public Health and the Calcutta School of Tropical Medicine, Calcutta, India.
University of California-----	Institute for Medical Research, Kuala Lumpur, Malaysia, and the University of Malaya, Singapore.
Tulane University-----	Universidad del Valle, Cali, Colombia.
Louisiana State University-----	University of Costa Rica, San Jose, C.R.
University of Maryland-----	Institute of Hygiene and Lahore General Hospital, Lahore, W. Pakistan.

PROGRAM PLANS IN 1967 AND 1968

Further efforts to broaden the research base of the existing ICMRT's are underway. Program Directors have been encouraged to broaden their programs whenever possible though additional health-related research projects mounted upon the ICMRT administrative structure, but financed by private foundations, by other federal agencies or by means of independent NIH grant awards to individual university investigators for discrete, well-defined investigations. Therefore, a variety of projects, other than those discussed, are being undertaken at the ICMRT sites. Other sources of participation and subsidy may thus contribute substantially to the development of comprehensive, multidisciplinary programs for the study of all health problems, as well as those devoted to medicine in the tropics. A continuing review of their scientific accomplishments and future programming is made by the Committee on International Research. It is apparent through post-reviews that these ICMRT organizations are now providing unexcelled research and training opportunities for American scientists which cannot be duplicated in the United States.

2096 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Distribution of research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
1. Continuations:						
Noncompeting.....	79	\$192,000	247	\$3,936,000	+168	\$3,744,000
2. New.....	188	3,842,000	170	1,751,000	-18	-2,091,000
3. Subtotal, regular program.....	267	4,034,000	417	5,687,000	+150	+1,653,000
4. General research support grants.....		53,000		659,000		+606,000
5. Scientific evaluation.....		20,000		20,000		
6. ICMRT.....		2,800,000		2,800,000		
7. Total, research grants.....		6,907,000		9,166,000		+2,259,000

Fellowships

	1967 estimate	1968 estimate	Increase or decrease
Fellowships (international postdoctoral).....	\$1,200,000	\$1,380,000	+\$180,000

INTRODUCTION

The International Postdoctoral Fellowships Program offers a unique opportunity for the sharing of scientific information on an international basis by permitting foreign investigators to work for a period of a year or two in collaboration with, and in the laboratories of, American colleagues in the United States. This program provides U.S. scientists access to the ideas of vigorous young investigators with stimulating and different viewpoints. In addition, since Fellows return to do independent research in their home countries, a basis is provided for the future collaboration between investigators here and those in different environmental settings.

PROGRAM PLANS IN 1967 AND 1968

This program will be continued in the 43 countries that participated in 1966. Each country, through a nominating committee composed of prominent scientists of that country, submits its recommendations for fellowships. These nominations are competitively reviewed by the International Fellowship Review Committee at the NIH. On the advice of the International Fellowship Review Committee the period of fellowships support has been lengthened to two full years. It was pointed out by the Committee that a fellow has his most productive time on the project during the second year when he is at the peak of his effectiveness. In order to provide for increased living costs, it is expected that authorization to increase the stipend levels of domestic fellows will be made during 1967. The additional funds requested for this program in 1968 will allow an increase of \$1,000 in the stipend level from \$6,000 to \$7,000 per year, thus making the international fellows stipends equal to that of domestic fellows.

Distribution of fellowships

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Continuations.....	65	\$314,000	70	\$355,000	+5	+\$41,000
New grants.....	101	886,000	100	1,025,000	-1	+139,000
Total fellowships.....	166	1,200,000	170	1,380,000	+4	+180,000

International research

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	71	\$904,000	71	\$938,000	-----	+\$34,000
Other expenses.....		2,422,000		2,434,000	-----	+12,000
Total.....	71	3,326,000	71	3,372,000	-----	+46,000

INTRODUCTION

The Office of International Research is responsible for coordination, policy formulation, and analysis of the National Institutes of Health International programs and activities. Included are responsibilities for administration of the U.S.-Japan Cooperative Medical Science Program, the NIH Special Foreign Currency Program, International Centers for Medical Research and Training Grants, Visiting Scientists Program, International Postdoctoral Fellowships Program, International Research Career Development Program, and Overseas Offices located in Rio de Janeiro, Brazil; Paris, France; Tokyo, Japan; and New Delhi, India.

PROGRAM PLANS IN 1967 AND 1968

In 1967 and 1968 it is planned to continue operations of the international programs listed above at approximately the same levels.

This request will provide funds for review and approval of International Postdoctoral Fellowships, Project Research Grants for Returning International Fellows, and special grants for International Centers for Medical Research and Training. This activity supports the review and advisory committee evaluating these grants and fellowships, and the staff which evaluates, analyzes, processes and manages the grants and fellowships.

The request also support the activities of NIH offices at four overseas locations: Paris, Rio de Janeiro, Tokyo and New Delhi. The four overseas offices provide information on scientific interests, capabilities and resources abroad and make recommendations on NIH policy and program development as it affects grants which are made to scientists located abroad.

The request also provides for staff to operate and coordinate the NIH program utilizing U.S. owned foreign currency (P.L. 480 program).

Support is also provided for an analytic activity which advises NIH management on the extent, scope, direction and relevance of NIH grants abroad. This activity collates information on medical research efforts of other countries to show the mutual effects of these efforts with those of NIH.

In addition to the above programs, the Office of International Research operates a new cooperative venture entitled the U.S.-Japan Cooperative Medical Science Program. The primary areas in this program are; cholera, leprosy, tuberculosis, parasitic diseases, virus diseases and nutrition. The request provides for funds for conferences between United States and Japanese scientists and support of scientific studies by contract.

The increase of \$46,000 which is requested includes \$22,000 for increased operating costs, \$15,000 for annualizations of positions new in 1967, an offset of \$3,000 for one less day of pay in 1968 and an increase of \$12,000 for centrally furnished services from the "National Institutes of Health Management Fund."

Training activities

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	10	\$120,000	10	\$123,000	-----	+\$3,000
Other expenses.....		63,000		64,000	-----	+1,000
Total.....	10	183,000	10	187,000	-----	+4,000

INTRODUCTION

The International Research Career Development Program (IRCDP) was started in Fiscal Year 1963 by the National Institutes of Health to develop competence in the Public Health Service in medical research related to problems of an international nature which cannot ordinarily be undertaken in the United States and to provide opportunities for promising young scientists to work abroad as members of the U.S. biomedical research groups. A variety of unusual or unique opportunities exist in foreign countries for pursuing studies of substantial importance to medical science in general and to the health of U.S. residents in particular. Investigations in the field of geographic pathology and epidemiology on an international basis are likely to provide important clues to the causes of certain diseases which cannot be studied adequately in more restricted environments.

PROGRAM PLANS IN 1967 AND 1968

The period of training is for two years, and approximately five new IRCDP associates are appointed each year. Each assignment is tailored specifically to the background and interest of the associate, as well as the projected needs of the Public Health Service. The additional \$4,000 requested in 1968 provides \$3,000 for increased operating costs and an increase of \$1,000 for centrally furnished services from the "National Institutes of Health Management Funds."

Division of computer research and technology

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits.....	89	\$842,000	104	\$1,170,000	+15	+\$328,000
Other expenses.....		2,925,000		3,505,000		+580,000
Total.....	89	3,767,000	104	4,675,000	+15	+908,000

INTRODUCTION

The Division of Computer Research and Technology plans and conducts research, developmental, and demonstration programs in mathematical and other computer-related sciences in support of NIH programs: provides a professional and technical advisory resource in all relevant areas of mathematics and other computer-related sciences; formulates and administers NIH-wide policies, standards, methods, and procedures regarding computation and data processing activities; and plans and conducts appropriate training of the National Institutes of Health staff.

PROGRAM PLANS IN 1967 AND 1968

With the appointment of its first Director in 1967, the Division is concentrating on building a top professional staff and in clarifying and redefining organizational functions and relationships. The major effort during 1967 is focused on an extensive program to develop a computer technology adequate to support the biomedical research and administrative activities of the National Institutes of Health. This undertaking will continue through 1968 and is designed to produce a technology capable of realizing the full potentialities of the newly acquired IBM 360 computing system. Toward the accomplishment of this goal the Division will: 1) acquire the necessary general and special-purpose computer hardware and begin to develop the supporting software, tools and computer languages; 2) develop a responsive interactive computer technology which will be made available to the laboratory scientists and management staff of NIH through the use of remote stations and, 3) develop the technology required to couple laboratory data-generating equipment with the more powerful processing capability of a large central computer.

During 1968 the Division, which will be in its third year of development, is requesting an increase of 15 new positions and a net increase of \$908,000. The new positions are required to provide depth and technical support in biological, physical, and behavioral sciences as they relate to the mathematics and statistics of computer technology. In addition to the \$202,000 needed in support of the re-

requested new positions, there are three major areas of further program development planned as follows: (1) a major expenditure of \$300,000 will be used to explore the ways in which computers coupled with optical scanning devices can aid the scientist by recording, classifying, storing and retrieving large volumes of data. Equipment will be designed to interpret data from X-rays and microphotographs and automatically scan additional specimens; (2) an additional \$200,000 is requested to pursue the development of a natural processing system whereby a scientist using a predetermined vocabulary of English language words can communicate with the computer without having to rely on intermediary programming and the accompanying and resulting delays in reading the problem at hand; and (3) an increase of \$50,000 is requested to establish a broad training program at the NIH whereby the scientists and administrators can effectively use the power and speed of modern computer technology in their programs. Included in the requested net increase is \$126,000 for mandatory items such as annualization of positions new in 1967, partially offset by one less day of pay in 1968. There are also increases of \$30,000 for centrally furnished services from the "National Institutes of Health Management Fund."

ENGINEERING DEVELOPMENT

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits-----	6	\$82,000	6	\$82,000	-----	-----
Other expenses-----	-----	266,000	-----	265,000	-----	-\$1,000
Total-----	6	348,000	6	347,000	-----	-1,000

INTRODUCTION

This activity, currently funded in total within Program Direction, began in fiscal year 1967 to plan for a centralized medical engineering development component. The efforts of this organization are to be directed towards applying engineering and technological innovations to biomedical problems. The major functions contemplated include the conduct of research and technical development; systems analysis engineering; engineering consultation, surveillance and development; and technical fabrication and services.

The request for 1968 represents a decrease of \$1,000. The program amounts are the same for both years; the decrease represents a reduced amount for centrally furnished services from the National Institutes of Health Management Fund.

PROGRAM PLANS IN 1967 AND 1968

From the engineering developments and technological innovations of recent years and the opportunities that such work in other fields provided for advancing medical research and diagnostic and treatment procedures, there has evolved the concept of a distinct activity managing target research and development programs of a bioengineering nature.

NIH has had the opportunity to review the valuable work of the Wooldridge Committee which reviewed NIH planning and organization generally, and the Ruina Committee which concentrated on the organization of developmental and contract activities. NIH further consulted with external engineering resources such as M.I.T., the Aerospace Corporation and Bell Laboratories, and engaged in substantial internal review. Out of these efforts, NIH has determined that a new organizational and functional pattern must be established which will (1) consolidate the existing NIH technical elements engaged in bioengineering and technical development, (2) furnish leadership and competence for further evaluation and growth, and (3) provide for critical surveillance and review of all NIH contract activities in these fields.

It is planned that the substantive responsibility for the design and direction of directed research and development programs such as the Artificial Heart and Artificial Kidney will remain in the particular Institute which has categorical responsibility for the specific area of research. Other bioengineering elements

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and related functions—existing or to be developed—which would be grouped centrally include:

1. Research and technical development based on the physical sciences and applicable to the resolution of biomedical problems in the areas of materials, analytical methods and instrumentation, and clinical methods and instrumentation.

2. The development of systems analysis capability encompassing the modeling and analysis of complex biological, physical, social and managerial systems.

3. The elements necessary to provide critical surveillance and specialized engineering consultation relative to the design, instrumentation and apparatus for intramural activities and/or the directed research programs and contracts of the Institutes and Divisions.

4. The activities involved in fabrication, modification and servicing of instruments, research equipment and special purpose devices utilized in NIH's intramural research activities.

The NIH request for fiscal year 1968 constitutes a minimal figure if, as we expect, a new Division is established either late in fiscal year 1967 or early in fiscal year 1968. To the degree that this Division includes the transfer of certain functions from other NIH components (e.g., the Biomedical Instrumentation and Engineering Branch, Division of Research Services) the positions and dollars from these components will need to be transferred to the Engineering Development account.

DIVISION OF RESEARCH FACILITIES AND RESOURCES

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
GRANTS						
Research.....		\$51,718,000		\$57,198,000		+\$5,480,000
General clinical research centers.....		(28,463,000)		(30,443,000)		(+1,980,000)
Scientific evaluation.....		(305,000)		(305,000)		0
Special research resources.....		(10,850,000)		(10,850,000)		0
Animal resources.....		(3,100,000)		(5,100,000)		(+2,000,000)
Primate centers.....		(9,000,000)		(10,500,000)		(+1,500,000)
Fellowships.....		100,000		200,000		+100,000
Training.....		250,000		318,000		+68,000
DIRECT OPERATIONS						
Collaborative research and development.....	2	1,766,000	2	1,991,000	0	+225,000
Review and approval of grants.....	116	1,395,000	119	1,511,000	+3	+116,000
Program direction.....	35	740,000	37	796,000	+2	+56,000
Total obligations.....	153	55,969,000	158	62,014,000	+5	+6,045,000

	1967 estimate	1968 estimate	Increase or decrease
General clinical research centers.....	\$28,463,000	\$30,443,000	+\$1,980,000
Scientific evaluation.....	305,000	305,000	0
Special research resources.....	10,850,000	10,850,000	0
Animal resources.....	3,100,000	5,100,000	+2,000,000
Primate centers.....	9,000,000	10,500,000	+1,500,000
Total, research grants.....	51,718,000	57,198,000	+5,480,000

INTRODUCTION

The primary mission of the Division of Research Facilities and Resources is to provide the nation's scientific community with the research resources and the research facilities essential for sustaining and advancing the national biomedical research and research training program. Its program underpins a broad spectrum of science by supporting services that are useful across the total panorama of biomedical research. The Division administers programs which

provide support: for clinical research centers where physicians and scientists can study human diseases; for computer centers and other special research resources that form a most important technological base for modern research; for critically important laboratory animal facilities and resources essential to a wide variety of specialized biomedical research efforts; and for several other types of major biomedical research resources.

General Clinical Research Centers

The General Clinical Research Center program was established to provide, in both effective form and adequate numbers, the facilities and resources in which the nation's clinical investigators can study human disease and related problems in human biology. The program is designed: to increase understanding of the nature and natural history of diseases; to extend the capability of medical science to treat and manage disease; to apply at the bedside the fundamental biological knowledge acquired in this basic research program; to train medical students and young physicians in the techniques and the discipline of clinical investigation; and to conduct demonstrations of new techniques and new therapeutic procedures for the instruction of medical practitioners.

Each center is a separate unit with a full-time senior clinical investigator serving as program director, a specified number of beds, a complement of nurses and technicians, and integral laboratories and supporting facilities. Within the entire complex, scientists from many disciplines work together in the conduct of exacting clinical research. Areas of research at these centers include aging, blindness, cancer, cardiovascular disease, and diseases contributing to infant mortality, cerebral vascular disease, neuropsychiatric disorders, transplantation of organs, and diseases of metabolism, especially diabetes mellitus.

As of June 30, 1966 awards have been made to fund 89 centers.

PROGRAM PLANS IN 1967 AND 1968

The \$28,463,000 available in 1967 to the General Clinical Research Centers program will provide support to the existing centers and fund approximately three new centers. It is anticipated that by the close of 1967 that approximately 92 center awards will have been made. The \$30,443,000 requested for 1968 will provide continuing support for the existing centers and within the limitations on availability of funds, will establish a number of outpatient centers as directed by the Report of the Senate Appropriations Committee, submitted in connection with the DHEW Appropriations for 1967.

Although the General Clinical Research Center program has provided many institutions with excellent facilities for the study of the hospitalized patient, the current outpatient facilities are grossly inadequate to meet the requirements for controlled clinical experimentation. Qualified experts have estimated that the major portion of human disease—as high as 90–95 percent—occurs in ambulatory patients. Therefore, just as inpatient clinical research centers have provided an environment which is far superior to the open ward, so will the special outpatient research centers, removed from the overburdened hospital outpatient service departments, provide in analogous fashion another urgently needed type of resource for clinical investigation.

The following are a few of the many projects conducted in General Clinical Research Centers during the past year:

Cancer.—At the University of Vermont General Clinical Research Center a new method for detection of cancer of the cervix has been developed; the technique indicates whether a therapeutic procedure destroyed or removed all of the neoplastic tissue.

Infant mortality.—At Stanford University an alarm device in premature infants signals to staff whenever a baby has been apneic (transient cessation of respiration) for more than 30 seconds. In response to the alarm, a nurse can recognize the apnea at a stage when simple stimulation alone will restore normal breathing patterns. This will prevent brain damage and mental retardation caused by unrecognized hypoxia (lack of oxygen) due to apnea.

Strokes.—Investigators at the University of Chicago School of Medicine have developed a new approach to the problem of cranial aneurysms, a major cause of strokes. Thrombosis of these dangerous lesions is produced by the passage of direct current across the aneurysm by means of a stainless steel electrode introduced by stereotaxic insertion.

Scientific Evaluation

The \$305,000 requested for 1968 will support the study sections and committees used by the Division to provide scientific merit review of grant applications.

These study sections and committees, composed of outstanding authorities in the various fields of medical research, are responsible for the scientific peer evaluation of all research grant applications and forward their recommendations to the appropriate National Advisory Council.

Special Research Resources

This program provides support to enhance the research capability of the nation through application of large-scale equipment and instrument-oriented resources to areas of major multidisciplinary research endeavor. These special resources include computing centers for medical and biological materials production and for scientific and technical information. Since such resources are usually too costly to be assigned to a single investigator, they are established for use by a community of scientists on an institutional, regional (city, state, section), or national basis.

The needs of universities, hospitals, and other institutions for computer resources and centralized instrumentation facilities, for laboratories devoted to large-scale preparation of commercially unavailable biological materials, and other special research resources are growing rapidly as the sophistication, capabilities, and costs of modern research increase. The progressive quantification of the biological sciences is reflected in the increasing requirements for specialized equipment, such as computers and analytical biochemistry instruments. Computing devices have served biomedical research not only in mathematical and statistical applications but also in process control functions where the experimental procedures themselves as well as the data are monitored and modified automatically.

Closely associated with the dependence upon instrumentation *per se* is the dependence upon continuing progress in the design of new instruments and the development of new applications and modifications of existing ones. The recognition of a need for new instruments and applications does not generally occur without an interdisciplinary effort involving biological scientists, physical scientists, and engineers. The opportunities for such interaction are by no means common in most biomedical research institutions. However, the necessary collaborative efforts are aided considerably by the mechanism of research resources devoted to the problems of biomedical instrumentation.

This program has been in existence since July 1962. At the present time support is being provided for 59 centralized resources of which 43 are computer centers, six analytical biochemistry instrumentation, three biological materials, three information sciences, and four biological instrumentation resources. Support will be provided for another computer center which will be activated in 1967.

PROGRAM PLANS IN 1967 AND 1968

The \$10,850,000 available in 1967 and an equal amount requested in 1968 will provide continuing support of the existing facilities.

Animal Resources

Any innovation—from a life-saving therapeutic procedure to a simple physiological manipulation—cannot be undertaken in man until exhaustively tested in the experimental animal. The rapid growth of biomedical research has imposed a substantial requirement for laboratory animal resources that will provide animals of the quality and in the quantity needed by all branches of specialized research. In addition, certain species of animals are becoming increasingly important for the development of model systems and systematic efforts will have to be made to provide such animals in adequate numbers and properly conditioned for experimental use.

Of primary importance is a program of project grants in the special field of laboratory medicine to provide important data and information concerning the major laboratory animal diseases. Such research grants will focus increasingly on improving the health of laboratory animals needed for medical research and research training. Included in the research program would be the acquisition of biomedical and physiological data on laboratory animals, both in normal and diseased states and under various environmental influences. Such information provides essential background information to the research worker and also provides the basis for improved standards of animal care.

Projects to define and develop new and useful animal biological models for medical research and studies to establish physiological and behavioral base lines on animal strains and species for which information is not now available warrant high priority. Special studies in genetics of laboratory animals must be undertaken to develop and maintain strains with anatomical, physiological, or biochemical variants in order to accelerate progress in major areas such as metabolic diseases, muscular dystrophy, and cancer.

Of equal importance is the need in the laboratory animal field to strengthen institutional laboratory animal resources. Demands made on animal resources by basic and programmed research endeavors and the growing national concern that research animals be given optimal care at all times, made it imperative that all institutions engaged in medical research provide adequate care for research animals. Grants should be made to assist in the initiation of such programs by providing funds for necessary alterations and renovations, for the salaries of key personnel, and for specialized equipment such as animal surgery equipment, anesthesia machines and cage washing facilities. Diagnostic laboratories to assist in the early detection of animal diseases and identification of inapparent infections so disastrous to research studies are essential components of a sound institutional animal resource program.

PROGRAM PLANS IN 1967 AND 1968

The \$3,100,000 available in 1967 will provide support for 26 ongoing resources and the establishment of 15 new resources.

New needs resulting from: toxicology studies, heart disease research, leukemia studies, chemotherapy research for the control and treatment of infectious diseases, development of vaccines, and other significant studies are placing greater demands on institutional animal resources.

The passage of PL 89-544, dated August 24, 1966 which provides that certain animals intended for use in research facilities be provided humane care and treatment will require renovation of a large number of institutional facilities to meet the new standards. The \$5,100,000 requested for 1968, an increase of \$2,000,000 would provide support for 41 ongoing, and an estimated 10 new grants for animal resources including renovation of institutional facilities to meet the new standards.

Primate Centers

Essential in the development of knowledge for the prevention and control of disease in man is the ability to gain an understanding of basic physiological and biochemical processes through experimentation on living systems. Since extrapolation from studies with lower animals directly to man is of limited validity and because nonhuman primates are afflicted with diseases similar to those of man, research on primates in many respects, is invaluable as a prelude to clinical investigation in man.

The Primate Centers program was established by the Congress in 1959 to provide optimal facilities and environment in which resident and visiting scientists of many disciplines could conduct research on those human health problems that could best be studied by utilizing the subhuman primate as the biological model.

PROGRAM PLANS IN 1967 AND 1968

Construction of the six regional centers and one national center have now been completed and all have ongoing research programs which are developing as rapidly as available funds will allow. Significant accomplishments have already been realized in infectious disease studies, reproduction and population control, and mental retardation to name only a few. Of equal importance is the rapidity with which information on the colonization, breeding and maintenance of the primate in a research environment is being accumulated and disseminated. In addition, this program is providing previously unavailable leadership in the development of institutional primate resources for support of medical research.

As with any developing program there exists a continuing need for increasing support. Construction of all centers has recently been completed and ongoing research program will now develop more rapidly. The projected estimates, as reflected in the funding for 1967 and 1968 are based on space and facilities now available for occupancy, scientific staff requirements and increasing costs of center operations as the various centers approach a stable level of full activity.

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Plans in 1967 and 1968 provide for continuation of support of all seven primate centers as follows:

	1967 estimate	1968 estimate
Regional Primate Research Centers:		
1. Medical Research Foundation of Oregon, Portland, Oreg.....	\$1,700,000	\$2,100,000
2. University of Washington, Seattle, Wash.....	1,265,000	1,500,000
3. University of Wisconsin, Madison, Wis.....	1,450,000	1,500,000
4. Emory University, Atlanta, Ga.....	1,175,000	1,500,000
5. Tulane University, New Orleans, La.....	1,340,000	1,400,000
6. Harvard University, Boston, Mass.....	1,000,000	1,300,000
National Center for Primate Biology:		
7. University of California, Davis, Calif.....	1,070,000	1,200,000
Total.....	9,000,000	10,500,000

Fellowships

	1967 estimate	1968 estimate	Increase or decrease
Total fellowships.....	\$100,000	\$200,000	+\$100,000

INTRODUCTION

Increased numbers of specialized research personnel are required for the conduct of expanded research programs in laboratory animal science and medicine. At present, there are inadequate numbers of such highly trained individuals. Scientists with demonstrated ability in the laboratory-animal sciences will be encouraged to accept fellowships awarded to pursue special problems in experimental anesthesiology, pathology, virology, primatology, biochemistry, etc., in order to help meet these needs.

PROGRAM PLANS IN 1967 AND 1968

The \$100,000 available in 1967 will provide support for ten new special fellowships at the postdoctoral level. The \$200,000 requested for 1968 would provide continued support for the ten existing fellowships and eight new fellowships.

Distribution of fellowships

Postdoctoral	1967 estimate		1968 estimate		Increase or decrease	
	Num- ber	Amount	Num- ber	Amount	Num- ber	Amount
1. Continuations: Noncompeting.....	0	0	10	\$120,000	+10	+\$120,000
2. New.....	10	\$100,000	8	80,000	-2	-20,000
3. Total fellowships.....	10	100,000	18	200,000	+8	+100,000

Training

	1967 estimate	1968 estimate	Increase or decrease
Total training grants.....	\$250,000	\$318,000	+\$68,000

INTRODUCTION

The increased use of animals in medical research programs, not only in total numbers, but also in the variety of species, and the attention being focused on the necessity of using animals raised under controlled conditions and of known

"pedigree," have resulted in a great demand by medical research institutions for professional support by specialists in laboratory animal medicine. A National Academy of Sciences—National Research Council study group has estimated that approximately 1,100 veterinarians with specialty training in laboratory animal medicine are needed by research institutions whereas presently only approximately 250 are available. This problem has a serious impact on present and future medical research efforts since the task of such people is to insure the ready availability of the appropriate biological model systems with which the investigator can work to study and resolve major medical problems.

PROGRAM PLANS IN 1967 AND 1968

The \$250,000 available in 1967 will provide support for seven training grants at the graduate level in the field of laboratory animal medicine. The \$318,000 requested in 1968 would support the seven ongoing grants and two new grants providing training to approximately 30 graduate students.

The program will include graduate training in pathology, microbiology, surgery, physiology, genetics, and other specialized fields as they relate to laboratory animals.

Distribution of training grants

Graduate	1967 estimate		1968 estimate		Increase or decrease	
	Num-ber	Amount	Num-ber	Amount	Num-ber	Amount
1. Continuations: Noncompeting	7	\$250,000	7	\$250,000	0	0
2. New	0	0	2	68,000	+2	+\$68,000
3. Total training grants	7	250,000	9	318,000	+2	+68,000

Collaborative research and development

	1967 estimate		1968 estimate		Increase or decrease	
	Posi-tions	Amount	Posi-tions	Amount	Posi-tions	Amount
Personnel compensation and benefits	2	\$30,000	2	\$30,000	0	0
Other expenses		1,736,000		1,961,000		+\$225,000
Total	2	1,766,000	2	1,991,000	0	+225,000

This activity supports studies carried out primarily by non-government scientists in cooperation with the scientific staff of this Division. These studies are financed through research contracts—continuing year to year commitments which are renegotiated each year.

PROGRAM PLANS IN 1967 AND 1968

It is anticipated that 13 or 14 contracts will be made in 1967 in the areas of special research resources, Pharmacology-Toxicology information and laboratory animal care.

The increase includes \$191,000 for support of the Pharmacology-Toxicology information program to accelerate the development and realization of methodologies and of systems for handling numerical data and other information related to the interactions between living systems, exogenous drugs, and poisons, as well as endogenous chemical compounds. Funds will be used to provide resources for the conduct of studies ranging from exploratory research through preliminary design and testing of modern systems for making accessible to a variety of classes of scientific research workers and other users the already large and rapidly increasing body of information in this area. The remaining \$35,000 will provide additional support for contracts for special research resources.

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Review and approval of grants

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits...	116	\$1,129,000	119	\$1,200,000	+3	+\$71,000
Other expenses.....		266,000		311,000		+45,000
Total.....	116	1,395,000	119	1,511,000	+3	+116,000

This activity supports the scientific and administrative staff of the Division's special research grant programs, General Research Support programs and the Health Research Facilities construction program. This includes program planning and development; review and evaluation of grant applications for presentation to the National Advisory Research Resources Committee, the National Advisory Council on Health Research Facilities and the National Advisory Health Council; and liaison with applicants, grantees, other components of the NIH, the PHS, advisory bodies, and interested organizations.

The increase requested will provide three positions and \$99,000 for assistance in program management.

Included in the net increase is \$6,000 for a mandatory increase due to annualization of positions new in 1967 offset by one less day of pay in 1968. There are also increases of \$17,000 for centrally furnished services from the "National Institutes of Health management fund".

Program direction

	1967 estimate		1968 estimate		Increase or decrease	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Personnel compensation and benefits...	35	\$374,000	37	\$407,000	+2	+\$33,000
Other expenses.....		366,000		389,000		+23,000
Total.....	35	740,000	37	796,000	+2	+56,000

This activity is responsible for the overall direction, administration, planning, evaluation and data analysis of the several programs of the Division of Research Facilities and Resources. The requested program increase of \$35,000 will be used for increased operating costs and support of two positions for program administration.

Included in the net increase is \$5,000 for a mandatory increase due to annualization of positions new in 1967 offset by \$1,000 for one less day of pay in 1968. There is also an increase of \$17,000 for centrally furnished services from the "National Institutes of Health management fund."

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 2107

New positions requested, fiscal year 1968

	Grade	Annual salary
Division of Research Facilities and Resources:		
Review and approval of grants:		
Chief of branch (1).....	GS-16	\$20,075
Clerical assistant (1).....	GS-6	5,867
Clerical assistant (1).....	GS-5	5,331
Total (3).....		31,273
Program direction:		
Public health program specialist (1).....	GS-14	15,106
Clerical assistant (1).....	GS-5	5,331
Total (2).....		20,437
Subtotal—Division of Research Facilities and Resources (5).....		51,710
Division of Computer Research and Technology:		
Mathematician (2).....	GS-15	35,100
Research mathematician (2).....	GS-14	30,212
Engineer (1).....	GS-14	15,106
Mathematician (2).....	GS-13	25,746
Systems analyst (1).....	GS-12	10,927
Engineer (1).....	GS-12	10,927
Mathematician (1).....	GS-12	10,927
Computer programmer (2).....	GS-11	18,442
Computer programmer (1).....	GS-9	7,696
Secretary (2).....	GS-5	10,667
Subtotal—Division of Computer Research and Technology (15).....		175,750
Total new positions, all activities (20).....		227,460

Senator HILL. Now, gentlemen, we go to general research and services. We will go back to our friend here, Dr. Shannon.

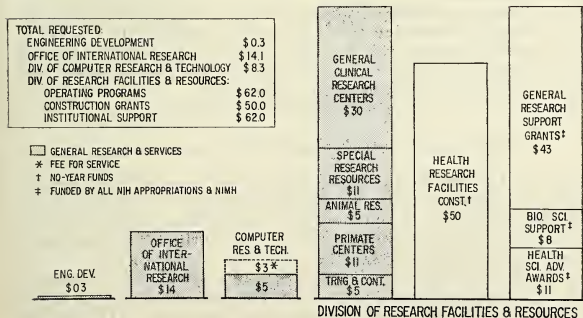
Dr. SHANNON. Senator Hill, Mr. Downey suggested that I not use charts or the blackboard, so this, I think, will help.

Senator HILL. This tells the story.

Dr. SHANNON. This is a better basis for looking at the activity.

(The document follows:)

FUNDS REQUESTED FOR GENERAL SUPPORT OF RESEARCH AND RESEARCH RESOURCES, FY 1968 (IN MILLIONS)



□ GENERAL RESEARCH & SERVICES

* FEE FOR SERVICE

† NO-YEAR FUNDS

‡ FUNDED BY ALL NIH APPROPRIATIONS & NIMH

Senator HILL. Off the record.
(Discussion off the record.)

INTRODUCTION OF WITNESSES

Senator HILL. You may proceed, sir.

Dr. SHANNON. Senator Hill, I am joined at the table here by Dr. Specht.

Senator HILL. Nice to have you here, Doctor.

Dr. SHANNON. Dr. Specht is Director of the Office of International Research; Dr. Pratt, at the end, who is Director of Division of Computer Research.

Senator HILL. Glad to have you, Doctor.

Dr. SHANNON. And Dr. Kennedy, who has responsibility for the programs dealing with institutional resources, health research facilities, and the general research support grants.

Senator HILL. Glad to have you here, Doctor, again.

Dr. KENNEDY. It is nice to be back, Senator.

METHOD OF PRESENTATION

Dr. SHANNON. Our presentation, Senator Hill, will be in three parts. We will deal with the general research and services appropriation which involves Dr. Specht, and Dr. Pratt, and some other activities in my office, and the resource programs of Dr. Kennedy.

In Dr. Kennedy's opening statement, the programs covered by that appropriation terminate on page 7, and you might want to discuss them at that point.

Then we can pick up again with Dr. Kennedy who will discuss the general research support grants, which are not a separate appropriation but a separate activity, and then the health research facilities program, which is an appropriation in itself.

Senator Hill, the activities of NIH which we have presented up to this time, while diverse, have had one thing in common. Each activity presented is conducted under a single legislative authority. The budget breakout is a simple reflection of how it is proposed to use each authority in program terms.

We now come to a series of very important activities for which the routine budget presentation tends to confuse rather than to clarify the relationship between the legislative authority, on the one hand, and the administrative means we have found effective for translating these authorities into program terms, on the other.

The appropriations covering these activities are two:

GENERAL RESEARCH AND SERVICES APPROPRIATION

One is the General Research and Services appropriation. These activities are conducted under the general legislative authority of the Public Health Service to pursue scientific activities for the development of new knowledge important to the resolution of disease problems and the maintenance of health.

The activities themselves—some with quite small dollar support, others with large dollar support—have two general purposes. First, they support activities essential to the overall mission of NIH, such as

computational activities and international activities, which are centralized as an administrative convenience and to achieve economy.

RESEARCH GRANT PROJECTS

Secondly, they provide the general resources to the scientific community, which supplement and provide an underpinning for research grant project support. These include such things as computation centers, primate centers, general clinical centers, and the like.

The second general appropriation, as I indicated earlier, covers health research facilities construction.

These centrally managed programs are contained either in the general structure of my office, as is the case for the Office of International Research, and for engineering and development, or in one of two divisions, the Division of Computer Research and Technology and the Division of Research Facilities and Resources.

The authorities were created by the Congress, the administrative apparatus by NIH. The relationships between the two are presented in the chart you see before you, which does, I believe, clarify the relationship of these important functions.

A summary of these activities will be found in the congressional justification beginning on page 340.

A summary of the dollars proposed under "General research services" is simply stated at the top of page 340, but the conventional breakout in terms of expenditures by object, at the bottom of the page, bears no relationship to operating realities.

This latter summary covers the complete activity of three segments of the program, Office of International Research, Division of Computer Science and Technology, and Engineering Development. But only the part of the activity of the fourth program, which is, as I indicated, the Division of Research Facilities and Resources.

I thought that it might be possible to clarify the situation by the inclusion of this table, which separates the function by operational entity.

Senator HILL. Yes. Good.

(The table follows:)

General support of research and research resources

	1967		1968		Change	
	Posi- tions	Amount	Posi- tions	Amount	Posi- tions	Amount
Office of International Research.....	81	\$11,616,000	81	\$14,105,000	-----	+\$2,489,000
Division of Computer Research and Technology.....	89	3,767,000	104	4,675,000	+15	+908,000
Engineering development.....	6	348,000	6	347,000	-----	-1,000
Division of Research Facilities and Resources:						
Operating programs:						
General research and service appropriations.....	153	55,969,000	158	62,014,000	+5	+6,045,000
General clinical research centers.....	-----	(28,463,000)	-----	(30,443,000)	-----	(+1,980,000)
Special research resources.....	-----	(10,850,000)	-----	(10,850,000)	-----	0
Animal resources.....	-----	(3,100,000)	-----	(5,100,000)	-----	(+2,000,000)
Primate centers.....	-----	(9,000,000)	-----	(10,500,000)	-----	(+1,500,000)
Training, contracts, and administration.....	-----	(4,556,000)	-----	(5,121,000)	-----	(+565,000)
General research support grants (funded from each of the National Institutes of Health and National Institute of Mental Health appropriations having regular research grants).....	-----	51,700,000	-----	61,700,000	-----	+10,000,000
General research support.....	-----	(41,700,000)	-----	(43,200,000)	-----	(+1,500,000)
Biomedical science support.....	-----	(6,000,000)	-----	(7,500,000)	-----	(+1,500,000)
Health sciences advancement awards.....	-----	(4,000,000)	-----	(11,000,000)	-----	(+7,000,000)
Health research facilities construction (separate appropriation, no-year funds).....	-----	41,027,000	-----	50,000,000	-----	+8,972,000
General program.....	-----	(35,001,000)	-----	(50,000,000)	-----	(+14,998,000)
Centers for research on mental retardation.....	-----	(6,026,000)	-----	-----	-----	(-6,026,000)

OFFICE OF INTERNATIONAL RESEARCH AND ENGINEERING DEVELOPMENT

Dr. SHANNON. I would like to present our proposals for the Office of International Research and for engineering development activities. Dr. Pratt can best present the proposals for the Division of Computer Science and Technology, and Dr. Kennedy can close in two parts by presenting, first, resource programs that are contained in the general research and services appropriation, and then continuing with general research support grants and the grants for health research facilities construction programs.

Senator HILL. All right.

FUNCTIONS OF OFFICE

Dr. SHANNON. The Office of International Research has several functions. The first function is policy formulation covering the interaction of NIH with the world of science. This is performed by the staff in Bethesda, supplemented by small staffs in each of four large cities, Paris, Rio de Janeiro, Tokyo, and New Delhi. This involves seven professionals assigned to the U.S. Embassies in these cities, assigned there solely to satisfy our own needs.

The second function is the conduct of a small international fellowship program which brings to this country as many as a hundred research fellows each year. These are selected on the basis of the excellence of the individuals concerned; with a view to the contribution

the fellow can make to research and with a view to the enrichment of the university that serves as his host in this country.

Fellows are appointed initially for 1 year and, in selected cases, are invited to stay an additional year. These fellows bring unique skills to the U.S. laboratories and have served as important bridges for development and collaborative activity between our institutions and institutions of origin.

The third function involves the maintenance of five International Centers for Medical Research Training, as follows: Johns Hopkins University, with an overseas activity in Calcutta; the University of California with an overseas activity in Kuala Lumpur in Malaysia; the University of Maryland with an overseas installation at Lahore, Pakistan; Tulane University at Cali, Colombia; and Louisiana State University in San Jose, Costa Rica.

PURPOSE OF ACTIVITY

This activity is funded for a wholly domestic purpose. While it does, no doubt, benefit the host country, the purpose is to provide the U.S. scientists, both young and developing and well-established, an opportunity to work on problems of general consequence to the United States, but in settings that provide excellent opportunities for observations and studies of disease in exotic settings. The program also provides, as an essential for a stable field operation, support for the home-based activity. In this way, it is possible to obtain the genuine involvement of the home university in the overseas activity.

This activity is supplemented by a small direct training program. The budget provides for the support of U.S. scientists, at a cost of \$187,000 a year. While we have found this an effective device for the training of U.S. scientists where unique experimental opportunities exist, we propose to terminate this program when the current assignment of professionals is completed; that is, at the end of 1969. We are convinced that the mechanism developed is clumsy, and that the same result could be obtained by simpler means.

STAFF SUPPORT FOR EFFECTIVE USE OF FUNDS

The next function of the Office of International Research is to provide staff support for the effective use of such funds as are available for the support of research, including the effective use of U.S.-owned currencies under Public Law 480. The furtherance of our general objectives requires a central focus of staff support. The activities supported are an extension of the scientific activities of our various institutes, but with the central staff, there is no need to have staff services in each of the Institutes that make use of this important device. Such centralization makes for highly effective, highly efficient program execution.

RESEARCH PROGRAM INVOLVING UNITED STATES AND JAPANESE SCIENTISTS

Staff direction is also provided for the U.S. programs developed under the agreement reached by President Johnson and Premier Sato for the development of a research program involving United States and Japanese scientists concerned with a limited number of specified common objectives.

The areas of work selected for inclusion in this program are of concern to the United States, to Japan, and to Southeast Asia. These program objectives include the development of immunological means to prevent tuberculosis; a better understanding of the disease-producing mechanisms of leprosy and cholera, going into the isolation and growth of the causative agents and the management of these diseases by therapeutic agents; and specific problems relating to diseases caused by insect-borne viruses. The latter studies parallel some of our own studies in Panama on encephalitic diseases and the hemorrhagic disorders. You may recall that Dr. Davis discussed this at some length with you.

Senator HILL. He did, yes.

STUDY OF NUTRITIONAL DEFICIENCIES

Dr. SHANNON. Fourth, study of the consequences to human development of nutritional deficiencies and, in association with the Department of Agriculture, studies aimed at the development of cereal grains with a higher content of high-quality protein. Our involvement here is to provide the clinical setting in which the nutritive value of these new cereal grains can be studied.

CHOLERA

Further, the development of a solid immunizing agent for cholera; and, finally, the study of two parasitic diseases, namely, filariasis and schistosomiasis.

Senator Hill, the studies on cholera are dramatic, and have a world-wide impact.

Senator HILL. Cholera is quite a disease in many countries, isn't it?

Dr. SHANNON. Indeed it is. I would point out, Senator Hill, that whereas, when this Japanese-American program was established, we had relatively little commitment in Southeast Asia, we now have some 500,000 military men there, with, I would guess from the newspapers, the possibility of some buildup beyond that. This does not include the very substantial number of people in various other activities external to the military. If we have as much concern for our U.S. citizens abroad as we do for those at home—and I believe we have an equal obligation to both—these programs are clearly of domestic interest and domestic concern.

Senator HILL. Yes.

TYPES OF EXPENDITURES

Dr. SHANNON. The expenditure on these programs is of two types. The bulk of the Japanese-American studies are part of the normal programs of the Institutes developed wholly for purposes of solving domestic problems. The smaller amount is devoted to problems of interest to U.S. scientists, but of more urgent concern to population groups in Southeast Asia.

AGGREGATE EXPENDITURE

The aggregate expenditure of all directly relevant programs in this activity would be approximately \$7.1 million in fiscal 1968. I would emphasize there is little activity of these general types that is not of

direct consequence to the American people, in a domestic sense. There is nothing in this program that is not of direct consequence to our domestic population, or Armed Forces, and our citizens who travel and work abroad.

Programs supported by us generally fall within the general authorities of the NIH operational Institutes and Divisions or are explicitly designated as Presidential authorities in Public Law 86-610 and are delegated to NIH for these purposes.

You may recall, Senator Hill, this was the bill that still bears the title of an International Institute for Medical Research, but the actual authorities, as passed by the Congress, didn't bear much relationship to the title that was retained.

Senator HILL. Well, the truth is, we passed the bill in good shape in the Senate.

Dr. SHANNON. Yes, sir.

Senator HILL. We passed a good bill, I thought, in the Senate, then when it got over to the House, to be frank about it—

Dr. SHANNON. You had a little problem.

Senator HILL. We had a little problem? A little problem, did you say? Well—

RESEARCH IN NUTRITION

Dr. SHANNON. Senator Hill, the final program of the Office of International Research is the conduct of research in nutrition. This activity, primarily conducted by NIH as a convenient focus, is performed to satisfy some of the need for scientific information of the Department of Defense and AID. Research is supported by funds transferred to our program by DOD and AID.

It consists of nutritional surveys of civil population, leading to recommendations on how deficiencies can be most effectively countered. It also encompasses research projects that stem more or less directly from such surveys. The amount contributed to the support of this program by ARPA is \$820,000 and by AID approximately \$420,000.

I might add that it is planned to transfer this type of nutritional research, which is largely within the province of the Bureau of Disease Prevention and Environmental Control. Those discussions are going on at the present time. The thought underlying this transfer is that we have serious nutritional problems in this country—particularly in depressed areas—and we believe that the techniques that have been worked out in developing countries might well be utilized in this country, as a basis for nutrition supplementation.

Now the second general activity in my office is in relation to an item which in the budget is called engineering development.

Senator HILL. Engineering?

ENGINEERING DEVELOPMENT

Dr. SHANNON. Yes, sir. We are currently funding, within the general research and services appropriation, an activity in the field of engineering development at a level of \$350,000 in 1967. We propose its extension into 1968 at the same level.

It is becoming ever more apparent that the general functions which are encompassed in the term "Medical engineering development" are playing an increasingly important role in biomedical research and

development. An examination of our programs shows clearly that engineering development will increasingly influence the programs of many of our Institutes and Divisions and that the academic aspects of biomedical engineering in many academic institutions are supported by the National Institute of General Medical Sciences. Prominent in these engineering development programs are those of the artificial heart, artificial kidney, laboratory automation, and automation of certain aspects of hospital operations.

NEW ORGANIZATIONAL UNIT MUST BE ESTABLISHED

It is evident that it would be unwise to provide for the purely engineering aspects of this development in each appropriation. A new organizational unit must be established which will (1) consolidate the existing NIH technical elements engaged in bioengineering and engineering development, (2) furnish leadership and competence for further evaluation and growth of the latter function, particularly insofar as the utilization of U.S. industry is concerned, and (3) provide for critical surveillance and review of all NIH contract activities in the field. We have made proposals to the Secretary which look toward the establishment of such a central organization at NIH.

CURRENT ENGINEERING RESOURCES

We are fortunate to have currently at NIH some engineering resources to initiate this activity. These include laboratories of instrument development and competence in fields of medical engineering in the Division of Research Services and in the laboratories of the National Heart Institute.

We have proposed that the staff and funds supporting these resources be located centrally and serve as the nucleus of this new activity. This would enable us to supplement the minimal effort we have made so far to take advantage of the very exciting opportunities that exist to capture for biomedicine some of the skills of the engineering sciences. We are not now requesting funds for the full-scale development of this function but propose that this be considered in next year's budget. The \$350,000 in the 1967 and in the 1968 budgets will permit the development of the central organization noted above, the continuation of the planning function now in being, and the beginning of operations at a modest level in 1968.

DIVISION OF COMPUTER RESEARCH AND TECHNOLOGY

Dr. SHANNON. Now if Dr. Pratt can pick up with the Division of Computer Research and Technology, we can have a logical progression through this appropriation.

Senator HILL. Good.

Dr. PRATT. Thank you, Senator.

The general utility of computers is now well recognized. And the hearings that have been held before the Subcommittee on Census and Statistics of the Committee on Post Office and Civil Service of the House of Representatives present eloquent testimony to the value of the digital computer.

The digital computer can manipulate vast quantities of data rapidly and accurately. The machine epitomizes the new methodology of computation which can be applied in the solution of problems in every discipline. The effectiveness of this new methodology lies in providing cheaper, faster or better solutions to specific problems and in providing the capability of undertaking new problems which, heretofore, were too large to compute by human or electromechanical means.

Recognition of the potential value of computation and the need for an integrated computer science program led to the establishment of the Division of Computer Research and Technology in 1964. I have had the honor to head that Division for the past few months. The mission of the Division is threefold:

THREEFOLD MISSION

First, the Division conducts research and development in mathematics, statistics, computer programming and computer systems engineering aimed toward the more effective use of computers in biomedical research.

I might just say, we are not interested in the computer itself here, we are interested in the computer as a means, a methodology to achieve progress, the hopes and plans which you have heard over the past few days.

Senator HILL. Yes.

Dr. PRATT. A second aspect of the Division is collaboration with the NIH administration, program representatives, and individual scientists on a wide range of projects that lend themselves to computing.

Third, the Division provides centralized computation and data processing service for all of NIH on a self-sufficient basis. It is on a fee-for-service basis, it is administered through the NIH service and supply fund, and during this current fiscal year the service is operating at a level of about three and a half million dollars. I think that is on the chart that Dr. Shannon provided for you.

The funds that are being requested here today, however, will be used to support the research and development programs of the Division.

COMPUTER DEVELOPMENT

I think, with your permission, I would like to say something about the history of computer development. The explosive growth of data processing at NIH had its beginning prior to 1958, when all data processing was done on a battery of electrical accounting machines. This equipment had a minimum of arithmetic capability and served only for tabulation. Irrespective of this deficiency, several excellent epidemiological studies were done, among them a pioneer study which correlated lung disease with tobacco smoking as a function of such variables as age; sex; type, duration, and amount of smoking.

In mid-1958, a computer of modest power was acquired. The epidemiological and administrative problems were rapidly transferred to the new machine. Soon the biomedical scientists began to use the computer for rapid, accurate evaluation of experimental data.

Beginning in late 1959, computer utilization grew rapidly and computer capacity grew not quite correspondingly, but indeed grew. Cur-

rently, a transition to a newer generation of computing equipment is being made at NIH to serve our expanding needs and diverse programs.

The experience at NIH has been in many ways typical of the national scene. Prior to 1959-60, the promise of computer technology for biomedical science was accepted by only a few investigators. The majority of scientific leaders viewed the new technology with reservations and even skepticism. Computers had been designed and developed by engineers working closely with mathematicians and logicians who used the computer for solving well-formulated mathematical and statistical problems.

Computers and computer programming languages appeared to be ill suited for the relatively imprecise data obtained from biological systems. Also, importantly, the supply of mathematical consultation and computer equipment to the biomedical scientist was severely limited. Fortunately, the forward-looking programs of the Federal Government made public funds available for advanced training of personnel and the acquisition of computing equipment for biomedical scientists. A rapid growth in the biomedical application of computers resulted as a direct function of those programs.

Thus, in the space of a very few years, biomedical computation and automatic data processing have become a significant part of the biomedical research and engineering effort. There have been no spectacular "breakthroughs" directly attributable to the computer. The availability of the computer has, however, accelerated the orderly evolution of biomedical science.

The explicit nature of computer programming has forced the physician and scientist to acquire data with greater precision and to store these data in an easily retrievable form. The investigator now performs quantitative statistical evaluations routinely on his data.

You mentioned earlier that this is the era of science. I would like to say, sir, that the computer is the method of science. And indeed impressionistic and descriptive medical science is giving way to more quantitative science and routine use of mathematical and statistical methodology.

TASKS PERFORMED BY COMPUTERS

Today the NIH staff use the computer for a multitude of tasks in the conduct and management of NIH research programs. These tasks comprise four general areas.

The NIH administration utilizes the computer in the management of procurement and plant maintenance operations, the control of numerous property inventories, the performance of several fiscal and accounting tasks, the maintenance of personnel files, and so forth.

The \$800 million extramural awards program represents a very large computer-based information storage and retrieval system. This program, which is coordinated largely by the Division of Research Grants, comprises a highly varied set of data processing tasks dealing with receipt, review, and dollar commitment activities within the institutes and divisions at NIH to aid and assist NIH leadership in carrying forth the programs about which you have been hearing.

Senator HILL. It will save us a tremendous amount of manpower, won't it?

Dr. PRATT. I hope so, sir. We certainly plan on it doing that.

Epidemiological and biometrical problems exist in every Institute at NIH, reflecting the concern of the research medical community for all aspects of disease in the human population. A few examples of this type of computer application may be helpful: the National Heart Institute is conducting a large, long-term study to determine the time-related physiological changes associated with heart disease; the perinatal study of the National Institute of Neurological Diseases and Blindness focuses broadly on the incidence and contributing causes of birth injury and mental retardation; the National Cancer Institute maintains a huge registry of reported cancer in human subjects. This registry is used in the continuing evaluation of therapy, including surgery, radiation, drugs, and hormones, either used singly or in combination.

The importance of this is that studies of this kind were virtually impossible before you had automatic data processing to, indeed, process these data. The computer thus has added a new dimension to medical research.

A significant portion of the computer workload at NIH relates to laboratory and clinical research problems. The bulk of this work involves the evaluation of experimental data using traditional statistical concepts and mathematical procedures.

MATHEMATICAL APPROXIMATIONS

I won't list all of this work, but I would like to point out that, aided by the computer, the scientists are making increasing use of complex mathematics. For example, mathematical approximations are on our machines which relate electrical activity and the associated movement of sodium and potassium ions across nerve cell membranes, and there are programs which allow the quantitative description of the stepwise metabolism of radioactively labeled metabolites such as glucose or fatty acids or the mineral elements such as iron. The hydrodynamic properties of airflow in the lungs and blood flow in the heart and great vessels have been subjected to quantitative description. These mathematical descriptions represent models of the biological system under study and they become very powerful supplements to continuing laboratory or clinical investigation. Using these models it is possible to define precisely the needs for future experiments.

Sets of relations can be examined in the computer, and continuing experiments can be predicted in the sets.

CENTRAL COMPUTING FACILITY

To satisfy the requirements of the NIH research programs, which are extremely broad, the Division maintains a strong central computing facility, including advanced computer programming services. Since April 1966 the Division has devoted a significant portion of its resources to adapting the new computers to meet the unique needs of NIH. In addition, the Division maintains a mathematical and statistical consulting resource in support of NIH programs. More broadly, this resource supports the medical research community.

The research and development programs of the Division are, of course, in support of the NIH research programs and involve the development of new and improved computing techniques and new mathematical and statistical procedures. Our present research program

emphasizes the development of more powerful mathematical procedures for use in the clinic, particularly in the area of cardiac function following surgical repair of malformations.

NEW COMPUTER PROGRAMING LANGUAGES

In this past year the first of a series of new computer programming languages has been completed. These new languages enable the scientist to utilize the computer independent of skilled programming personnel, make the computer transparent, and make it available to the scientist.

The computer capability of the central facility can be extended into the laboratories and the clinics by the development of a teleprocessing capability. Given remote access to the computer, scientists will be able to evaluate data and use mathematical modeling methods on a timely basis at the site of the ongoing investigation.

Automatic processing of English language is an important need in science, education, and industry. Dr. Marston's presentation emphasized the importance of being able to support therapy and diagnosis. This communication aspect of computers is indeed based in natural English language processing. There is a need to create computer programs which will understand the meaning, the specific semantics of communication. The Division has established a program in this area, and we have had some progress.

APPLICATION OF COMPUTERS TO PATIENT CARE ACTIVITIES

The Division is also supplying staff assistance and financial support to the Clinical Center in the application of computers to patient care activities. Significant support is being given to a highly innovative research program directed toward automating a large number of the analytical procedures in the clinical pathology laboratories. The success of this program, of course, will have a national impact on medical care.

However, there are large costs involved here, and the NIH has agreed that a cautious approach is necessary to automating hospital functions.

SUMMARY

In summary, the primary responsibility for designing, conducting, and interpreting individual scientific investigations rests with the Institutes at NIH. In support of these investigations, the research and development programs of the Division are being organized to provide collaborative, consultative, and service support in all aspects of computer technology. The imaginative research programs of the several Institutes present no end of challenging opportunities so that all aspects of computer technology can be made available.

The performance of the Division's mission currently is restricted only by the limiting resources, especially personnel. There is a shortage of manpower and computing power. The shortage is national. The skilled people are simply not available. It is gratifying, however, to report to you that we have been able to recruit leadership in the mathematical and engineering areas, sufficient to have activated two new laboratories in this past fiscal year. To support our continuing research programs and expand developmental research efforts in sys-

tems development, pattern recognition, mathematical modeling, and computation linguistics, we are requesting a budget of \$4.675 million which is an increase of \$908,000 and 15 positions over our current budget.

ADEQUACY OF BUDGET ESTIMATE

Senator HILL. You haven't had sufficient funds for those 15 additional positions heretofore?

Dr. PRATT. We have not.

Senator HILL. Do you think you can make definite progress under the budget estimate?

Dr. PRATT. Yes, sir. We did have a reduction, but this is a new program, and has a new leader. The reductions reflected the best estimates of dollars needed for this program at a particular point in time. We can indeed support these new positions with these dollars, and I think mount an effective program with the budget at hand. We will make some changes. We won't acquire all of the laboratory gear that we hoped would be possible. We will rent where we would have purchased. We can make adjustments, and it is my intent that the program will not suffer under these budget reductions.

Additional positions and funds, of course, would be useful. But I don't think we will dilute our programs. We will make adjustments.

Senator HILL. Dr. Shannon?

Dr. SHANNON. I would agree, Senator Hill.

If Dr. Kennedy now speaks to the remaining part of the "General Research and Services" appropriation, the operating programs in his Division. This would complete the testimony on that appropriation.

Senator HILL. All right, Doctor.

DIVISION OF RESEARCH FACILITIES AND RESOURCES

Dr. KENNEDY. Senator Hill, I welcome this opportunity to appear before you in behalf of the programs of the NIH for whose immediate administration I am responsible—those of the Division of Research Facilities and Resources.

MISSION OF DIVISION

The mission of this Division is to provide the Nation's scientific community with the solid foundation and basic complement of facilities and resources essential to progress in medical research.

The programs presently operated by this organization can best be understood if placed in historical perspective. By the mid-1950's the NIH, with the enthusiastic and generous support of the Congress, had established a series of research and research training grant programs under the aegis of the several categorical Institutes. However, expansion of the attack on disease and death reached a limit at about that time, due to a severe deficit in the laboratory and clinical space necessary for the conduct of research. It was not until 1956, with the passage of the Hill-Bridges Health Research Facilities Act, that a systematic program emerged which enabled the NIH to join with non-Federal biomedical research institutions to construct and to equip, on a share-and-share-alike basis, facilities for health-related research.

HILL-BRIDGES ACT

The Hill-Bridges Act was the first important program in which the NIH focused on the needs of institutions rather than on those of individual scientists. Over the next few years, however, the problems of institutions—the basic organizational units in which research is performed and research training conducted—emerged as major concerns of both the NIH and the Congress.

By 1962 the Congress had authorized and appropriated funds for a complex of programs designed to assist research institutions as such. In that year, these programs were administratively grouped in a new organization, the Division of Research Facilities and Resources, on the ground that they comprised a natural unity, predicated on the concept that institutions, if they are to participate with the Federal Government in an attack upon health problems of broad public import, required support in their own right.

With this brief historical introduction I propose to review the specific program components of the Division, beginning with those elements included in the "General research and services" appropriation, then moving on later to the health research facilities program, and closing with a description of the general research support program.

GENERAL CLINICAL RESEARCH CENTERS

Clinical investigation—the study, in the human subject, of the cause, natural history, and treatment of disease—has been the springboard from which almost every major advance in medical science has been launched into the domain of medical practice. Perhaps even more importantly, clinical observation—the study of "nature's experiments"—has frequently provided clues which have stimulated extremely important and fruitful progress in the basic biomedical sciences. Like all modern science, the effective prosecution of clinical research demands an environment that provides the complex resources, facilities, and instrumental ensembles needed to collect precise and accurate information. Recognizing this fact, the Congress began in 1960 to provide funds to the NIH to inaugurate a program to establish general clinical research centers in appropriate institutions throughout the country.

INDEPENDENCE RESEARCH UNITS

Each general clinical research center is an independent research unit, within a large hospital complex, usually affiliated with a medical school. A typical center consists of 10 to 12 hospital beds, the staff necessary for operation, a dietetic kitchen, and various other supporting resources that enable clinical research to be performed under conditions of careful control and optimum patient care. Funds awarded in this program may be expended for the renovation of space to establish the center, and for equipment, hospitalization reimbursement, salaries of professional personnel, and other necessary operating expenses.

As of January 1, 1967, awards had been made to fund 91 centers in 74 institutions, encompassing 1,130 hospital beds, dedicated solely to research.

EXAMPLES OF RESEARCH ACTIVITIES

Although the general clinical research center program is less than 7 years old, it has already made many significant contributions to modern clinical medicine, some of which have been reported to this committee on previous occasions. The following are examples of research currently underway:

Kidney stones, the vast majority of which initially manifest themselves in otherwise healthy individuals, are not only disabling but they are likely, if untreated, to cause serious disease and, ultimately, complete destruction of the kidney. Thus, it is imperative to discover their cause and to learn to prevent them. Recent studies revealed a substance in normal urine that prevents the precipitation of calcium and phosphate—two principal components of most kidney stones. This substance, absent in patients who form stones, can be restored to the urine when phosphate salts are administered by mouth.

Efforts to isolate and characterize this "antistone" substance indicate that it is a single polypeptide and work is continuing to make further characterization possible. These studies will be of very great value in understanding the mechanisms of kidney stone formation and in learning how to prevent it.

A new method for the detection of cancer of the cervix of the uterus is under intensive study. The technique allows visual recognition of cancerous and precancerous tissues. This visualization is possible because such cells selectively and differentially accumulate a chemical compound, hematoporphyrin, which exhibits vivid fluorescence when exposed to ultraviolet light. In addition to its usefulness as a method for the detection of lesions, the technique may also be extremely helpful in assessing whether all of the cancerous tissue has been removed by treatment.

The by-now well-launched General Clinical Research Center program has provided many institutions with superb facilities for the careful study of the hospitalized patient. On the other hand, a major fraction of human disease occurs in ambulatory patients who presently escape the careful study they warrant. Currently, outpatient facilities in most institutions are grossly inadequate to permit the careful observations and the precise measurements necessary for the emergence of new scientific knowledge. To the degree that funds are available, the Division of Research Facilities and Resources plans to inaugurate a program to establish institutional facilities and resources for the study of this extremely important domain of human disease, as recommended by the report of the Senate Appropriations Committee, submitted in connection with our appropriation for fiscal year 1967.

INCREASE IN REQUEST OVER 1967 APPROPRIATION

To provide continuing support for this most important General Clinical Research Center program in fiscal year 1968, \$30.4 million is requested, an increase of \$2 million over last year.

Senator HILL. Read that again, please, sir. Give me that figure.

Dr. KENNEDY. The President is asking this year for \$30.4 million, Senator, and this is a \$2 million increase over the funds appropriated for the same program this year.

ANIMAL RESOURCES PROGRAMS

The requirements of the biomedical scientific——

Senator HILL. I thought we appropriated \$50 million last year, didn't we?

Dr. KENNEDY. Not for the clinical centers.

Dr. SHANNON. That was for health research facilities construction.

Senator HILL. That was the construction program, yes. A different program. I see.

Dr. KENNEDY. The requirements of the biomedical scientific research community for increasing numbers of high-quality laboratory animals are growing at a rapid rate. The DRFR is attempting to satisfy their needs through creation and continuing support of certain types of animal colonies; through research into the diseases of the laboratory animal; through development of improved techniques for animal husbandry and colony maintenance; and, perhaps most importantly, through training of a cadre of animal care specialists capable of exploiting to the fullest the potential inherent in the present and future animal facilities and resources of the country.

PRIMATE CENTERS

The national and regional Primate Research Center program, administered by this Division, is now firmly established. With the dedication of the New England Regional Primate Research Center in November 1966, the construction phase of the Primate Center program closed. All of the seven centers authorized are now in operation and their research programs underway. The normal biology of each species of primate, including its natural history from conception to death and its intercurrent diseases, is under intense investigation. In addition, primates are being used in the centers for research in genetics, infectious diseases, reproductive biology, nutrition, aging, and drug testing, plus a myriad of other studies.

To provide continuing support for the ongoing research programs of these centers and to permit fuller utilization of the facilities made available by the completion of construction, \$10.5 million is requested for fiscal year 1968—an increase of \$1.5 million over the funds appropriated in fiscal year 1967.

NONPRIMATE ANIMAL RESOURCES

In addition to the need for subhuman primates, other species and strains of laboratory animals are required in large numbers and of high quality. The animal resources program of the DRFR provides assistance to grantee institutions to improve the care and welfare of research animals, for research projects in laboratory animal medicine, and for the establishment and maintenance of colonies of animals particularly useful in research.

To support 41 ongoing grants, and an estimated 10 new grants for animal resources which would include support for renovation of institutional facilities to meet new standards, \$5.1 million is requested for fiscal year 1968.

Senator HILL. What do you have this year?

Dr. KENNEDY. \$3 million. This request is an increase of \$2 million over presently available funds.

Senator HILL. Yes. How much did you ask for?

Dr. KENNEDY. We asked for \$7 million.

Senator HILL. Seven. Mr. Downey calls my attention to the fact that the NIH request was \$8,250,000. Seven million was the Department request. The budget estimate was \$5,100,000; is that right?

Dr. KENNEDY. Right, sir.

SPECIAL RESEARCH RESOURCES PROGRAM

Senator Hill, the last element of the DRFR programs in the general research and services appropriation.

Senator HILL. Yes.

Dr. KENNEDY. The special research resources program provides funds to establish and to operate the large-scale, highly specialized instruments and instrument systems that are increasingly necessary for the prosecution of modern research. Resources of this character are usually centralized within a single institution and provide services to a wide scientific clientele both in that institution, and, frequently, in neighboring institutions. First given explicit organizational status in 1962, this program now supports 59 such centralized resources, including 43 biomedical computing centers. Other classes of resources within the program are centers for analytical biochemistry instrumentation, for biological materials production, and for scientific and technical information.

ASSISTANCE TO SCIENTISTS

Computational facilities funded by the program serve biomedical science in numerous ways. They assist scientists with special problems that call for data collection, processing, and analysis on a massive scale. They can continuously monitor certain types of research experiments and automatically modify them. They assist in the solution of some of the complex differential equations describing the physical and chemical characteristics of biological systems. They make possible the construction and the rapid manipulation of mathematical descriptions, or "models," believed to characterize the behavior of living systems. And they provide very rapid access to sources of previously stored data and information.

PATTERN OF VENTRICULAR ACTIVITY IN ELECTROCARDIOGRAM

In one special research resource, investigators appear to have successfully solved the problem of teaching a machine to recognize the pattern of ventricular activity in the electrocardiogram, not only under normal circumstances—a relatively easy task—but in a wide variety of pathological conditions. This appears to be a major step toward detection by machine of abnormalities in heart rhythm. These techniques make it possible to collect and rapidly analyze comprehensive quantitative data on the electrical behavior of the heart following myocardial infarction. These studies are being extended to develop devices that

can automatically alert the physician if undesirable events are taking place. When investigations made possible by this technique have been completed, information will become available to enable physicians to select better criteria for triggering the alerting alarm.

SAME AMOUNT REQUESTED IN 1967 AND 1968

To provide continuing support for the special research resources program, \$10.8 million is requested for fiscal year 1968—the same amount as that requested in 1967.

Senator HILL. About half of what you requested; is that right?

Dr. KENNEDY. That is correct, sir.

Senator Hill, the three programs just described conclude the presentation of the President's request for funds from the "General research and services" appropriation for the Division of Research Facilities and Resources.

Depending on your pleasure, sir, I can either pause here for questioning, with Drs. Pratt, Specht, and Shannon on the "General research and services" appropriation, or move on to discuss health research facilities.

Senator HILL. Is there anything you would like to add, Doctor?

Dr. SHANNON. No, sir. I would just like to apologize for the difficulty we have in handling, as a unit, a number of related programs that in the performance make sense, but don't make sense when separately presented in terms of the general authorizations under which each of these activities is conducted. We used this device today, after all the categorical programs had been presented, as the best way of presenting to you a comprehensive picture of the totality of these activities. I hope we have been more successful this year than we have in the past in doing it. If Dr. Kennedy may now complete his statement, then questions about any one of these activities can be answered by the appropriate witness.

Senator HILL. All right.

GRANTS FOR CONSTRUCTION OF HEALTH RESEARCH FACILITIES

APPROPRIATION ESTIMATE

"GRANTS FOR CONSTRUCTION OF HEALTH RESEARCH FACILITIES

"For grants pursuant to [parts] part A [and D] of title VII of the Act, [\$56,000,000] \$35,000,000, to remain available until expended[, but only in the case of such part D, with respect to applications filed prior to July 1, 1967, and approved prior to July 1, 1968]."

Amounts available for obligation

	1967	1968
Appropriation.....	\$56,000,000	\$35,000,000
Unobligated balance brought forward.....	27,350	15,000,000
Unobligated balance end of year.....	-15,000,000	
Total.....	41,027,350	50,000,000

Obligations by activity

	1967 estimate	1968 estimate	Increase or decrease
Grants for construction and equipment:			
(a) Health research facilities.....	\$35,001,550	\$50,000,000	+\$14,998,450
(b) Centers for research on mental retardation.....	6,025,800		-6,025,800
Total obligations.....	41,027,350	50,000,000	+8,972,650

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
41 Grants, subsidies, and contributions (total obligations).....	\$41,027,350	\$50,000,000	+\$8,972,650

Summary of changes

1967 enacted appropriation.....	\$56,000,000
Unobligated balance brought forward.....	27,350
Unobligated balance end of year.....	-15,000,000
1967 total estimated obligations.....	41,027,350
1968 estimated obligations.....	50,000,000
Total change.....	8,972,650
Increases: Health research facilities.....	+15,000,000
Health research facilities.....	-1,550
Centers for research on mental retardation.....	-6,025,800
Total decreases.....	-6,027,350
Total net change requested.....	+8,972,650

EXPLANATION OF CHANGES

The increase of \$8,972,650 is a result of \$15,000,000 appropriated in 1967 for Construction of Health Research Facilities which will become available in 1968, offset by \$6,000,000 due to the expiration June 30, 1967 of the authorization for Construction of Centers for Research on Mental Retardation and adjusted for balances brought forward in F.Y. 1967.

AUTHORIZING LEGISLATION

The legislative authority in Section 301 of the Public Health Service Act which provides for the award of grants for research, research training, and fellowships is included in the section of the justifications under the tab, "Preamble Paragraph" in Volume V.

The Public Health Service Act, Title VII, Health Research and Teaching Facilities and Training of Professional Health Personnel, Part A, Grants for Construction of Health Research Facilities.—

"Sec. 701. (b) It is therefore the purpose of this part to assist in the construction of facilities for the conduct of research in the sciences related to health by providing grants-in-aid on a matching basis to public and nonprofit institutions for such purpose."

"Sec. 704. There is hereby authorized to be appropriated for the fiscal year ending June 30, 1957, and for each of the nine succeeding fiscal years, not to exceed \$50,000,000, for making grants-in-aid for the construction of facilities for research, or research and related purposes, in the sciences related to health; and any sums appropriated pursuant to this section shall remain available until expended."

2126 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

"AUTHORIZATION OF APPROPRIATIONS

"SEC. 704. There is hereby authorized to be appropriated for the fiscal year ending June 30, 1957, and for each of the nine succeeding fiscal years, not to exceed \$50,000,000, and for the fiscal year ending June 30, 1967, and the two succeeding fiscal years, an aggregate of not to exceed \$280,000,000 for making grants-in-aid for the construction of facilities for research, or research and related purposes, in the sciences related to health; and any sums appropriated pursuant to this section shall remain available until expended."

Grants for construction of health research facilities

	1967 estimate	1968 estimate	Increase or decrease
Health research facilities.....	\$50,000,000	\$35,000,000	-\$15,000,000
Unobligated balance brought forward.....	1,550	15,000,000	+14,998,450
Unobligated balance end of year.....	15,000,000	0	+15,000,000
Subtotal, health research facilities.....	35,001,550	50,000,000	+14,998,450
Centers for research on mental retardation.....	6,000,000	0	-6,000,000
Unobligated balance brought forward.....	25,800	0	-25,800
Subtotal, mental retardation.....	6,025,800	0	-6,025,800
Total.....	41,027,350	50,000,000	+8,972,650

The major objectives of the Health Research Facilities Program are to meet needs for new and replacement facilities for this Nation's research program in the health sciences, including the construction of biomedical research facilities in medical or dental schools, special centers for the study of aging, human reproduction, pharmacology and toxicology, and construction and renovation of animal facilities. These modern facilities are essential to the Nation's colleges, universities, and non-profit research institutions in effectively prosecuting research efforts leading to better health for the American people. This program authorizes grants for up to 50 percent of the cost of the facility, to be dedicated to research in the health sciences for a minimum of ten years by the recipient institution.

For the last two decades the imbalance between the rate of manpower development and the rate of facilities construction, replacement, and renovation has steadily widened. Although this imbalance will continue to grow and to result in serious overcrowding of research space, the requested \$35 million will help make it possible to meet a portion of these needs by providing approximately 1,300,000 net square feet of space to house 6,500 full-time equivalent research workers. This space will contribute to the continuing program efforts of the NIH categorical institutes and will provide research space for young scientists emerging from training programs which is essential to their commitment to research careers. The construction of health research facilities will continue to be coordinated with the goals of the several categorical institutes, thus expanding the national capability for research in cancer, metabolic diseases, arthritis, heart disease, mental illness, etc. Historically, total appropriations of \$430 million have been made by Congress through 1967 for Health Research Facilities construction of which \$415 million will have been obligated by the end of fiscal year 1967. Since the inception of the program, 1,832 applications have been received requesting a total of \$701 million.

Upon the recommendation of the National Advisory Council on Health Research Facilities, the Surgeon General has thus far awarded 1,383 grants, totaling \$395,987,714. This amount for construction is more than doubled by the non-federal matching funds contributed by the grantees.

Medical schools.....	\$210,494,573
Dental schools.....	9,328,760
Schools of public health.....	8,554,724
Other health-related schools ¹	85,956,024
Institutions other than health-related schools ²	81,653,633
Total.....	395,987,714

¹ Includes schools of veterinary medicine, pharmacy, nursing, chemistry, and biological sciences.

² State, county, and municipal health agencies as well as hospitals and independent research institutions.

Although grants made under this program have ranged from the construction of relatively small additions to existing facilities to the support of all necessary research areas in large medical centers, the trend in recent years has been in the direction of providing large, multipurpose facilities. Specific examples of projects completed during the past year are the following:

Private nonprofit medical schools:

Stanford University, Palo Alto, Calif. (a 3-story clinical sciences research building)-----	\$2, 117, 588
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Public medical schools:

State University of New York (Downstate Medical Center), Brooklyn, N.Y. (construction of a building for clinical research laboratories)-----	2, 520, 000
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University of Texas, Dallas, Tex. (construction of a new research laboratory building)-----	1, 186, 069
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Medical College of Virginia, Richmond, Va. (construction of research space in a new education building)-----	1, 766, 893
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Private nonprofit:

Salk Institute for Biological Studies, LaJolla, Calif. (installation of fixed equipment and the necessary utilities in the north wing of the institute laboratory)-----	1, 010, 400
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University of Southern California, Los Angeles, Calif. (a complex of 4 biosciences research buildings)-----	1, 060, 650
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The \$35,000,000 requested for 1968 would be used to help meet some of the following estimated requirements:

Balance of recommended grants as of June 30, 1967-----	\$85, 700, 000
Applications for fiscal year 1968 councils-----	65, 000, 000

Total estimated requirements-----	150, 700, 000
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There are no funds requested for construction of centers for research on mental retardation since the authority for this program expires June 30, 1967.

DR. KENNEDY. I will proceed now to talk first to the health research facilities program, a separate appropriation.

The health research facilities construction program, authorized under part A of title VII of the Public Health Service Act, began its second decade of operation in the present fiscal year. The objectives of the Hill-Bridges authorization, which has been renewed four times, were to expand the total national "plant capacity"—the physical facilities—for health research through the construction of new; the renovation of outmoded, and the replacement of obsolete research facilities.

GRANTS AWARDED

In cold statistical terms, the program has awarded 1,383 grants over the past decade, totaling \$396 million. These were distributed among 405 different institutions in every State, as well as in the District of Columbia and Puerto Rico. Upon completion, these projects will have provided for the construction or renovation of more than 17 million net square feet of functional modern research space. Grantee institutions have more than upheld their end of the partnership, matching the Federal contribution of \$396 million with \$550 million from non-Federal sources, thus substantially exceeding the statutory requirement to contribute 50 percent of the cost.

MEASURE OF ACCOMPLISHMENTS

But the real measure of the accomplishments of this program is not the dollars spent, nor the square footage of space built or renovated, nor the number of laboratories equipped, nor even the number

of scientists housed. Surely, the true and meaningful measure of this program is the progress that medical science has made in the war against disease, disability, and death. And it is abundantly clear that this program has contributed, directly or indirectly, to the prosecution, during the last decade, of a very large number of important research projects which can be credited with advancing the treatment of cancer, with the control of infectious diseases through chemotherapy or by immunization with vaccines, and with the amelioration of metabolic diseases. Most of these projects could not have been undertaken unless this program had provided the laboratories in which biomedical research scientists, young and old, could work.

NEED FOR NEW RESEARCH SPACE

The research achievements already made possible through the construction of health research facilities constitute incontrovertible testimony to the past value of this program. But what are the needs of the present, the issue before us here today? Medical science has come a long way, but there is still much to be learned, much to be understood, much to be probed. Bright young people are emerging from training, eager to join their preceptors in seeking solutions to the problems and challenges of disease. There simply isn't enough space available for them to work. All classes of research space are in short supply, a fact that plays a key and controlling role in the ability of the Nation to get on with the task of discovery, so essential to achieve dominion over disease and death. The biomedical research institutions of the Nation need new research space, to relieve the crowding of existing facilities and to provide suitable accommodations for their expansion. They also need to modernize research space that has become less than optimally useful. Today, as a result of the rapid pace of scientific progress, the same premise holds true for laboratory design as it does for men and ideas: be renewed or wither. The new medical schools, which must be created to expand the number of physicians needed to provide medical care to our people, must have research facilities if they are to attract competent faculties.

PUBLIC LAW

Finally, the enactment by the Congress of Public Law 89-544, regulating the transportation, sale, and handling of certain animals intended for use in research, has focused attention upon yet another facet of this problem. This act has made even more immediate the realization that the biomedical scientific research community has had only limited success in providing facilities for laboratory animals at a rate commensurate with the growing use of these animals in medical research programs.

AMOUNT AUTHORIZED

For fiscal year 1968, \$35 million is requested to help meet the needs of the health research facility program.

Senator HILL. And that is nothing like what we authorized, either, is it?

Dr. KENNEDY. You authorized \$280 million for 3 years, sir.

Senator HILL. You haven't anything like gotten that. This \$35 million won't anything like bring you up to the \$280 million authorization, will it?

Dr. KENNEDY. It will leave \$195 million for the third year of the authorization, sir.

1967 APPROPRIATION

Senator HILL. Last year, I think you had a budget estimate of \$35 million, and we raised that to \$50 million, isn't that true?

Dr. KENNEDY. We requested \$15 million and you raised it to \$75 million.

Senator HILL. That is right, sir. The budget estimate was \$15 million. Almost put you out of business in the field, didn't it?

Dr. KENNEDY. It was a threat, sir.

Senator HILL. What is the amount we finally appropriated?

Mr. CARDWELL. \$50 million.

Senator HILL. \$50 million was the amount we finally appropriated.

UNOBLIGATED BALANCE

Mr. CARDWELL. And the request this year is designed to carry the same level—\$35 million in appropriations, plus \$15 million in unobligated balances that would be carried forward from the end of 1967.

Senator HILL. Why these unobligated balances?

Dr. KENNEDY. The Budget Bureau asked us to defer \$15 million of the appropriation from expenditure in this fiscal year to next fiscal year, Senator.

Senator HILL. What they did, then, they reduced the \$50 million down to \$35 million.

Dr. KENNEDY. Operationally.

Senator HILL. As a practical matter.

Dr. KENNEDY. Operationally, yes.

Senator HILL. Operationally. Well, that's what it is, isn't it?

Dr. KENNEDY. Yes, sir.

Senator HILL. And how much short did you say you will be of the \$280 we authorized?

Dr. KENNEDY. Of the \$280 million, we will have received, if this budget is approved, \$85 million for the first 2 years, leaving a residual authorization of \$195 million for the third year.

Senator HILL. Weren't you persuasive with your budget? How much did you ask the Budget for?

Dr. SHANNON. We requested the full authorization, sir.

BUDGET REQUEST HISTORY

Senator HILL. Requested a hundred million dollars? You requested \$115 million.

Dr. KENNEDY. The departmental request was reduced by \$65 million in the President's budget.

Senator HILL. You asked for \$115 million, the Department asked for \$100 million, and then the Budget allowed you \$35 million. Is that right?

Dr. KENNEDY. That is correct.

Dr. SHANNON. This year is also the last year of authority to construct under a preferential matching formula, a limited number of

university-based research centers on the problem of mental retardation. That authority expires this year, and those funds will have been committed, so they drop out of the further consideration of construction. This was over and above the basic authorization for the \$280 million.

Senator HILL. Above the \$280 million?

Dr. SHANNON. Yes, sir.

Senator HILL. We expect to extend that authority.

Dr. SHANNON. No, sir; not this. The thing that has been proposed for extension is the further construction of university-based centers for mental retardation primarily for the training of service-oriented personnel. We have not requested that this research center authorization be extended.

Senator HILL. Extended.

Dr. SHANNON. No, sir.

Senator HILL. What about the staffing for mental retardation centers?

Dr. STEWART. Senator Hill, the President's program on which he has been heard in the House but has not been heard in the Senate yet, contains the proposal of staffing under the mental retardation centers the extension of the construction of community mental retardation centers, and the extension of the construction of the university-based clinical centers, with the insertion of the word "research" in the last extension. It does not propose the extension of this particular phase of it.

LANGUAGE IN SENATE REPORT FOR 1967

Senator HILL. Yes. Now, last year in our report, we stated, and I quote:

The Health Research Facilities construction program is not intended to play a supporting role in educational construction programs for which the Congress has made separate provision. HRFC grants should therefore in no sense be limited to construction projects at newly expanding medical schools, as the Committee understands has been suggested.

What has been your policy during the past year?

Dr. KENNEDY. The requests from the new and expanding schools have essentially been processed as all other requests, sir. I think the only award in this category that we have made during this year is to the new school at Penn State University, the Milton Hershey Medical School at Penn State University. They have been handled on their own merits, as research facilities applications.

Senator HILL. Yes. Now you say you had some \$15 million left that the Budget got you to hold back?

Dr. KENNEDY. We have \$15 million held back from expenditures this year, sir. We will carry over next year.

UNFUNDED APPROVED APPLICATIONS

Senator HILL. What is the number and amount of unfunded and approved applications that you will have at the end of this fiscal year?

Dr. KENNEDY. Our estimate is that we will have about 59 applications approved; their cumulative dollar value in the neighborhood of \$63 million.

ESTIMATED AMOUNT OF UNFUNDED APPLICATIONS AT END OF 1968

Senator HILL. Well, if the Congress approves the \$35 million budget request, what will be the number and amount of unfunded applications at the end of fiscal 1968, do you estimate? What do you have to estimate?

Dr. KENNEDY. My guess is about \$100 million, Senator Hill. We expect about \$65 million worth of business next year, to be added to the \$63 million that we carry over and the available funds will not allow us to fund them all. We will have a backlog of about \$100 million at that time.

Senator HILL. A backlog of about \$100 million.

Dr. KENNEDY. Correct.

EFFECT OF \$2 MILLION INCREASE FOR GENERAL CLINICAL RESEARCH CENTERS

Senator HILL. Now on your "Research facilities and resources," we all know you have got a rising cost of hospitalization. That is very evident. You can hardly pick up a newspaper, today, that you don't see rising costs.

Dr. KENNEDY. We are well aware of this, sir.

Senator HILL. In view of this rising cost, what is the effect of the increase of about \$2 million for general clinical research centers? Isn't this really a reduction rather than an increase, I mean as far as results are concerned?

Dr. KENNEDY. I don't think we will be able to sustain the present level of program activity in these centers, sir. I think that the rising costs will force a reduction in utilization, and a good deal of non-occupancy of these dedicated research beds.

Senator HILL. So we are really going to have a reduction, aren't we?

Dr. KENNEDY. Effectively, sir.

Senator HILL. Effectively, yes.

RECOMMENDATION OF COMMITTEE TO INCLUDE OUTPATIENT CLINICS IN CLINICAL RESEARCH PROGRAM

Now last year the subcommittee recommended the clinical research program should include studies among patients not requiring hospitalization by including outpatient clinics in the program. What progress have you made in this direction?

Dr. KENNEDY. Well, we have not been able to scare up the funds to get anything started. We are still very hopeful. We place great importance on this program. We think we can get into a very important new domain of clinical investigation this way, but we are really caught in a price squeeze, Senator Hill.

Senator HILL. At the present time. And you will be in your 1968 budget.

Dr. KENNEDY. I am afraid so.

Senator HILL. Of course; is there any provision made in the budget? To help you get out of this squeeze?

Dr. KENNEDY. There is no specific explosion.

Senator HILL. There is none, is there? How much will be required to get you out of the squeeze?

COST OF MAINTAINING EXISTING LEVEL OF PROGRAM ACTIVITY

Dr. KENNEDY. It was our estimate at the time this budget was put together last fall that it would cost about \$34.3 million to maintain our existing level of program activity. That is to say, full use of 1,130 beds that we support, Senator Hill. I now suspect that this was an underestimate, because, as you are aware, there is a very sharp transience in hospitalization costs at the moment.

Senator HILL. Very definitely.

Dr. KENNEDY. That is our estimate of how much it would take to maintain present level of program, and would not include any new program elements.

Senator HILL. No new program elements. Just to maintain.

Dr. KENNEDY. Correct.

Senator HILL. All right. Go ahead, sir.

RESIGNATION OF DR. SCHMEHL

Dr. KENNEDY. I would just like to conclude the description of the health research facilities program, Senator, with a bit of sad news. As I suspect you are well aware, Dr. Francis L. Schmehl has been in charge of this program since its establishment by the Congress in July of 1956, and he has done a yeoman job here. Today is the last time he will appear at the appropriations hearing as backup. He will join the faculty of the University of Nebraska as their director of research services on the first of July. We will sorely miss him.

Senator HILL. I am sorry he is going to leave you.

Dr. KENNEDY. I am, too, sir.

Senator HILL. Mighty sorry. I think he has done a very fine job.

Dr. KENNEDY. A magnificent job.

Senator HILL. A very fine job. Not going to join that Nebraska football team, is he?

Dr. SCHMEHL. I will probably be privileged to see some of the games, Senator.

Senator HILL. Well, we are awfully sorry you are going, Doctor. I think it is quite a loss. Awfully sorry.

Dr. SCHMEHL. Thank you, Senator.

GENERAL RESEARCH SUPPORT GRANTS

APPROPRIATION ESTIMATE

"GENERAL RESEARCH SUPPORT GRANTS

"For general research support grants, as authorized in section 301 (d) of the Act, there shall be available from appropriations available to the National Institutes of Health for operating expenses the sum of **[\$51,700,000]** *\$61,700,000*: *Provided*, That none of these funds shall be used to pay a recipient of such a grant any amount for indirect expenses in connection with such project."

Amounts available for obligation

	1967	1968
Appropriation.....	\$51, 700, 000	\$61, 700, 000

Obligations by activity

	1967 estimate	1968 estimate	Increase or decrease
General research support grants.....	\$51, 700, 000	\$61, 700, 000	+\$10, 000, 000

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
41 Grants, subsidies, and contributions (total obligations)...	\$51, 700, 000	\$61, 700, 000	+\$10, 000, 000

Summary of changes

1967 enacted appropriation.....	\$51, 700, 000
1968 estimated obligations.....	61, 700, 000
Total change.....	+10, 000, 000
Increases : Program : General research support grants.....	\$10, 000, 000

EXPLANATION OF CHARGE

The program increase of \$10,000,000 will be distributed as follows : \$1,500,000 for general research support to the originally supported schools and institutions ; \$1,500,000 for biomedical sciences support grants and \$7,000,000 for health sciences advancement awards.

AUTHORIZING LEGISLATION

The legislative authority in Section 301 of the Public Health Service Act which provides for the award of grants for research, research training, and fellowships is included in the section of the justifications under the tab, "Preamble Paragraph" in Volume V.

The Public Health Service Act, Title III, General Powers and Duties of Public Health Service, Part A, Research and Investigation.—

"Sec. 301. (d) Make grants-in-aid. . . to public or nonprofit universities, hospitals, laboratories, and other institutions for the general support of their research and research training programs: *Provided*, that such uniform percentage, not to exceed 15 per centum, as the Surgeon General may determine of the amounts provided for grants for research and research training projects for any fiscal year through the appropriations for the National Institutes of Health may be transferred from such appropriations to a separate account to be available for such research and research training programs grant-in-aid for such fiscal year;"

Introduction

The General Research Support grants program contributes to the development of research capabilities of institutions so that they may become effective partners with the Federal Government in the pursuit of biomedical research objectives of national importance. This is accomplished by: (1) providing flexible general support to both health professions schools and other university graduate schools and components so as to enhance the effectiveness of the research projects underway at the institution, to redress imbalances in institutional research activities, and at the same time permit the development of institutional objectives along self-articulated lines; and (2) support designed to accelerate the advancement of existing capabilities in health research and related graduate research training activities within institutions which have demonstrated an appropriate base for the achievement of scientific excellence.

Program Plans

Traditional General Research Support Program: This program will continue to provide encouragement to institutions to meet emerging opportunities in research, to explore new and unorthodox scientific ideas, and to use research

funds in ways that will contribute to long range institutional development for the improvement of health research and of the research environment rather than depend on the specifics set out by research grants projects. It makes possible the recruitment of faculty and other professional personnel, the retention of senior investigators, and the support of research associates and research trainees in a variety of disciplines. In addition, general research support funds are used to initiate, support and expand research facilities, exclusive of construction costs, needed by many investigators within an institution. Other uses of general research support funds include the support of travel of scientists to professional meetings, the creation of new research and research training opportunities, the support of exploratory research projects by young investigators and the acquisition of costly apparatus necessary for the proper conduct of research activities. Under this program, approximately 296 separate awards are now made to schools of dentistry, medicine, osteopathy, pharmacy, public health and veterinary medicine, and to hospitals, research institutes, research foundations, and State and municipal health departments.

Biomedical Sciences Support Grant Program: This program extends general research support to non-health professions schools. The NIH has long recognized the importance to the nation of the contributions to the health sciences made by investigators and teachers in academic components not covered by the General Research Support program, as demonstrated by the fact that a significant proportion of NIH research project grants, graduate training grants, center grants, etc., go to these components. It is essential that flexible general research support funds be provided in order that the project-oriented funds may be utilized most effectively in these components, and that they may have the same benefits that now accrue to the health professions schools. Approximately 100 institutions are funded under this program in 1967.

Health Sciences Advancement Award Program: Funds were provided in 1966 to establish a program of grants for health sciences advancement purposes to institutions primarily graduate academic institutions. Unlike the General Research Support program which rewards attained excellence, this new program emphasizes promise and opportunity and is conceived to be a means for providing time-limited support for a well defined effort by the Institutions to advance to a new level of achievement in research and research training in the health sciences. Approximately eight health sciences advancement awards will be made in 1967.

Distribution of Funds by Program Area, in 1968

The requested amount of \$61.7 million, an increase of \$10.0 million, would be distributed as follows: \$43.2 million for General Research Support to approximately 310 institutions; \$7.5 million for Biomedical Sciences Support Grants to approximately 115 institutions, and \$11.0 million for health Sciences Advancement Awards to approximately 22 institutions.

The following table illustrates the 1967-68 distribution of general research support grants as proposed in this estimate:

General research support	1967 estimate		1968 estimate	
	Number	Amount	Number	Amount
Educational institutions:				
Dentistry.....	49	\$2,468,000	49	\$2,550,000
Medical.....	90	23,719,000	93	24,340,000
Osteopathy.....	5	171,000	5	179,000
Public health.....	12	1,797,000	12	1,797,000
Pharmacy.....	9	475,000	10	490,000
Veterinary medicine.....	11	1,248,000	12	1,327,000
Noneducational institutions:				
Hospitals.....	63	6,303,000	66	6,344,000
Research foundations, institutes, and others.....	55	5,193,000	61	5,839,000
Health departments.....	2	326,000	2	334,000
Subtotal.....	296	41,700,000	310	43,200,000
Biomedical sciences support grants.....	100	6,000,000	115	7,500,000
Health sciences advancement awards.....	8	4,000,000	22	11,000,000
Total.....	404	51,700,000	447	61,700,000

Dr. KENNEDY. I would like to close, Senator Hill, with a brief description of the general research support program. This was created by Public Law 86-798, and explicitly designated to strengthen institutions. The avowed objectives of this program were to enable them: to cultivate scientific excellence by building institutional strength; to enlarge their role in determining the direction of their research and research training programs, and to balance these programs in accordance with their own long-range research aspirations; to explore emerging opportunities in research through the pursuit of new and/or unorthodox ideas; to foster early recognition and support of scientific talent; and to attract an increasing amount of non-Federal research funds for their institution.

INSTITUTIONAL GRANT PROGRAM

The first administrative device used to take advantage of this authority for the general support of research and research training was an institutional grant program. Schools of medicine, dentistry, and public health were the initial recipients of awards. Later, qualification requirements were extended to include other health professional schools; to hospitals engaged in research; and to State and municipal health departments.

In the spring of 1966, at the urging of Congress, this institutional grant program was extended to include nonhealth professional components of the graduate divisions of academic institutions. The new program, together with its predecessor, provides proportional funding for research and research training to institutions heavily engaged in the type of health-related research that is of interest to the NIH.

These two programs deliberately permit and encourage institutions to exercise broad discretion in the use of the grant funds, provided that the expenditures are for research and research training in the health sciences. In addition, the programs furnish institutions with an unparalleled opportunity to creatively administer grant funds within the context of their own long-range research objectives.

The flexibility with which these funds can be used means that they are particularly suited to the task of coupling institutional goals with the missions of the various Federal agencies; at the same time this local ability to make decisions allows them to redress imbalances created by the zeal with which Federal agencies have pursued their statutory missions.

There can be no question that these two institutional grant programs have served as a powerful instrument to help institutions throughout the Nation strengthen and expand their health-related research capabilities.

COMPETITIVE DEVELOPMENTAL GRANTS

Biomedical research is an activity almost totally dependent upon the academically based scientific research community. As a result of the growing governmental investment in biomedical research, the Congress has shown an increasing interest in developing a broader base of scientifically excellent academic institutions.

It has become more and more evident that a few outstanding medical centers cannot constitute a research community large enough to serve the entire Nation.

During the past year, the NIH announced a new program to encourage comprehensive institutional advancement toward excellence in biomedical research and research training. Called the Health Sciences Advancement Award, it will provide grants to carefully selected colleges and universities that can demonstrate evidence of growth potential in health-related research activities. Funds from this program will be directed toward institutions that can become truly centers of excellence in research and research training by developing their facilities, staff, and research potential.

The first nationally competitive cycle for Health Sciences Advancement Awards is now underway. With these new awards, we hope that more and more outstanding health science research centers will emerge throughout the land to join the battle to ameliorate the impact of disease upon the people of this Nation.

\$10 MILLION INCREASE IN BUDGET REQUEST

The President's budget requests \$61.7 million for fiscal year 1968, an increase of \$10 million, for this complex of programs, as follows: \$43.2 million for the traditional general research support program; \$7.5 million for the biomedical sciences support grant program; \$11 million for support of the Health Sciences Advancement Award program.

Thank you, sir.

TOTAL AMOUNT AUTHORIZED

Senator HILL. What is the total amount authorized?

Dr. KENNEDY. The authorization is pegged to the total NIH grant budget. The statutory obligational limit is 15 percent of the amount and would be approximately \$95 million this year.

Senator HILL. And what is your total figure?

Dr. KENNEDY. \$61.7 million, sir.

Senator HILL. Instead of \$95 million.

Dr. KENNEDY. Correct.

NIH REQUEST

Senator HILL. How much did NIH request?

Dr. KENNEDY. The NIH requested \$70 million for this program.

Senator HILL. You got \$61 million?

Dr. KENNEDY. \$61.7 million.

Senator HILL. \$61.7 million. And the NIH requested \$70 million.

Dr. KENNEDY. Correct.

INTERNATIONAL COOPERATIVE PROGRAM

Senator HILL. Go back a minute, Doctor, to your international cooperative program. You have to have an international agreement as a basis for making these grants?

Dr. SHANNON. No, sir; we don't. This is a unilateral action on our part, but in order to be certain that we don't do things that might not be in the best interests of the country, prior to making a grant and obligating the funds, the proposed action is cleared with the State Department, so that if there is something that would be against our best interests, they can so inform us.

Senator HILL. They can advise you.

Dr. SHANNON. Yes, sir; but it does not involve the need for an international agreement.

Senator HILL. Does not?

Dr. SHANNON. No, sir.

INTERNATIONAL CENTERS FOR MEDICAL RESEARCH AND TRAINING

Senator HILL. Well, you have had the international centers for medical research and training in operation for many years, haven't you?

Dr. SHANNON. Yes, sir.

Senator HILL. How long a time would you say, approximately?

Dr. SHANNON. Seven years, sir.

Senator HILL. Seven years.

Dr. SHANNON. I might say, Senator Hill, these have been reviewed in depth during the past year, and in the case of two of them, certain corrective recommendations have been made. They will be reviewed in depth again this coming summer.

We are impressed by the importance of the program, and by the very broad local resources in this country that are necessary to make the overseas operation effective. The deficiencies that have been uncovered seem to be primarily due to an inadequate domestic base, rather than either the intent of the institution or the conduct of the overseas operation.

Senator HILL. Yes.

Dr. SHANNON. We would be very glad to review this in substantial depth for you next year, or indeed, give you an analysis of the present situation today.

I would prefer to wait until after we have the second review in the summer, and then present the total problem to you next year, if this would be agreeable.

Senator HILL. We would be glad if you will do that for us; will you?

Dr. SHANNON. Yes, sir.

Senator HILL. Now you speak about cholera, and that sort of thing, but are there many specific accomplishments that you would attribute to this program of international centers?

Dr. SHANNON. Indeed there are.

Senator HILL. To wit?

MAJOR ADVANCES IN CHOLERA

Dr. SHANNON. The major advances in cholera have been as the result of American efforts during the past decade. The advances have come from the contributions of three groups. One is the Naval Medical research unit in Taipei; the second is the Pakistan-SEATO Cholera Research Laboratory in Dacca. The third is the Johns Hopkins International Center for Medical Research and Training at Calcutta. It has been possible to develop a very broad program that ties these three groups together, and, as a result, we have made very rapid progress. In terms of the progress itself, there have been four broad major advances.

The first is the establishment of a treatment schedule. This was done primarily by Dr. Phillips at the Naval Medical Research Laboratory in Taipei, some 5 years ago.

Senator HILL. Yes.

Dr. SHANNON. He showed that adequate replacement of saline would prevent deaths due to cholera. A second observation was made by the Hopkins group in Calcutta and by the group in Dacca which showed that broad spectrum antibiotics could terminate an acute attack in a matter of some 36 hours.

The third observation was that our current vaccines are highly effective in preventing the disease, but are not a hundred percent effective. Our figures show that within the 9-month period subsequent to inoculation, one gets protection on the order of approximately 75 percent.

The fourth specific advance was the demonstration—by a scientist who had returned from Calcutta to Hopkins, working together with one of our grantees in the Downstate Medical Center of the State University of New York—that cholera vibrio produces in the culture medium a specific toxin that in laboratory animals, more particularly in dogs, produces the same symptomatology as the clinical disease. For the first time, we now have an animal model system to study the disease. This, in turn, has made possible the present effort to develop a toxoid for this toxin—comparable in all respects to diphtheria toxoid—so that one may specifically inhibit the syndrome which we know as cholera, without the need of removing the cholera vibrio from the environment. This is very hopeful, because it is impossible to remove the vibrio and because the vaccine is not a hundred percent effective in the whole organism.

If the toxoid is effective we should be able to develop a solid immunity that, with suitable booster doses, will, hopefully, remove the disease from being of great importance on the international scene.

So, I think that this is a highly productive enterprise. It has involved our own direct operation, a grant-supported international center, and a naval operation in Taipei.

Senator HILL. Now I am very much interested, and I am gratified to hear the story of the progress that you have made in cholera prevention.

Dr. SHANNON. I would say, Senator Hill, that while we support the Calcutta operation, the operation in Dacca, operated under the name of the SEATO Cholera Research Laboratory, is largely supported by funds from the AID and by the availability of Public Law 480 funds. It does not appear in this appropriation, although we monitor, direct, and furnish the staff for the operation.

Senator HILL. Well, as I say, I am very much gratified by the progress you have made against cholera. But can you give us any illustration of any disease that we have over here to come out of these international groups?

Dr. SHANNON. From the international centers?

Senator HILL. Yes.

ROLE OF POOR NUTRITION IN INTELLECTUAL DEVELOPMENT

Dr. SHANNON. I think so, Senator Hill. The Kuala Lumpur unit, run by the University of California, is addressing itself very seriously to the role of poor nutrition in intellectual development. It is possible to take large population groups in that type of environment and do certain things that would be quite impossible in this country. From such studies it is possible to get definitive information that will permit

us to design optimum supplemental feeding for depressed population groups in this country that, at the present time, depend largely on rule-of-thumb calculations.

STUDY OF DIARRHEAL DISEASE

A study of diarrheal disease is turning out to show that a substantial number of cases are not due to the conventionally recognizable micro-organisms of the *E. coli* type or the cholera organism. A substantial number behave as though they are due to viruses. One of our very serious problems in handling premature infants, particularly in economically depressed areas, is the high death rate due to a combination of respiratory disease and diarrheal disease. If you take almost anything that we do overseas, you will find some area for the application of that knowledge in our own country.

Senator HILL. Some benefit to us.

Dr. SHANNON. Yes, sir.

Senator HILL. That is what I wanted to bring out for the record. I am delighted we are helping these people overseas; I am gratified by what you tell us about this cholera. I wanted to bring out in the record that we are getting benefits for our own people, too.

Dr. SHANNON. Senator Hill, I think this is the best example of truly enlightened self-interest. It demonstrates the universal concern of all medical science for all disease, and the futility of trying to compartmentalize that which is domestic and that which is international. As I have said, quite apart from helping the very large number of our own citizens who are overseas, the results which one gets from this type of research are directly applicable to domestic problems.

Senator HILL. Well worth while for us.

Dr. SHANNON. Yes, sir.

Senator HILL. That is what I wanted to bring out in the record.

PROPOSED CENTER FOR RESEARCH ON PHARMACOLOGY AND TOXICOLOGY

Doctor, I have a letter here from Senator Jordan of North Carolina concerning the University of North Carolina's role in a proposed center for research on pharmacology and toxicology. Senator Jordan's letter states there is no request contained in the 1968 budget funds for such a center.

Did the NIH submit to the Public Health Service such a request?

I shall place in the record at this point the letter to me from Senator Jordan, together with a copy of the letter to him from Dean Isaac M. Taylor of the University of North Carolina Medical School.

(The letters follow:)

UNITED STATES SENATE,
COMMITTEE ON PUBLIC WORKS,
April 4, 1967.

HON. LISTER HILL,
Chairman, Subcommittee on Labor, Health, Education, and Welfare; Committee on Appropriations, United States Senate.

DEAR LISTER: As you know, since 1965 Public Health Service and the University of North Carolina at Chapel Hill have been considering the establishment at Chapel Hill of one of the several research centers planned for the nation to undertake studies of various poisons to which human beings and animals might be subjected, known as centers for Research in Pharmacology and Toxicology.

The University was invited to and did submit an application for one of these centers and it was approved by the Surgeon General of the Public Health Service in 1965.

I am advised that since then the University has taken substantial steps in fulfilling part of its commitment toward this objective, including the assembly at Chapel Hill of a staff and arranging temporary quarters to house the center.

Funds for construction of the permanent facility for this project were not requested in the President's fiscal 1968 budget proposal, but I hope your subcommittee will give careful consideration to the urgent need for it which I feel is well demonstrated and provide funds to get it underway.

I enclose for your information a copy of a letter which I received some time ago from Dean Issac M. Taylor of the University of North Carolina Medical School which provides more detailed information on the project.

Sincerely,

B. EVERETT JORDAN, U.S.S.

THE UNIVERSITY OF NORTH CAROLINA
AT CHAPEL HILL,
THE SCHOOL OF MEDICINE,
February 10, 1967.

HON. B. EVERETT JORDAN,
Senate Office Building,
Washington, D.C.

DEAR SENATOR JORDAN: I am writing about a matter of importance to the University, the State and the nation. The subject is the Center for Research in Pharmacology and Toxicology which we are developing, under NIH sponsorship, as part of the Medical School in Chapel Hill.

In the Fall of 1964, Dr. Thomas Butler, a professor of Pharmacology here, was informed by the NIH through the Institute of General Medical Sciences that the U.S. Public Health Service planned the establishment of two to four research centers in the nation to undertake studies relevant to the then developing concerns about poisons of various kinds to which humans and animals might be subjected. Dr. Butler who is an eminent scientist in this field was invited to submit an application on behalf of the University for location of one of the centers in Chapel Hill. The decision was an important one because the magnitude of the endeavor promised to involve considerable commitment of time and effort on the part of Dr. Butler and his scientific colleagues and on the part of the Medical School and University administration. After thorough discussion with Chancellor Paul Sharp and other University officials we decided to submit an application because we felt that the purposes of the program were consistent with the research objectives of the University, that a center in Chapel Hill would strengthen our educational programs in biological sciences and medicine, and that if the University were deemed capable of successfully establishing a center, it had a responsibility to the nation to do so. Accordingly, an application was submitted and approved by the Surgeon General of the U.S. Public Health Service to commence September 1, 1965. Approval was given initially for seven years with an operating budget totalling seventeen million dollars. The annual operating budget after full activation is to be approximately four million dollars. It is the express expectation of both the NIH and the University that the center will continue for at least 20 years.

In the intervening year and a half, Dr. Butler has been assembling a staff and arranging for temporary quarters to house the Center. Nationally, the NIH has continued development of the program. A center has been established at the State University of Iowa and an application for another center at St. Louis University is under consideration.

The question of permanent quarters for the center here in Chapel Hill has been a knotty one, and it is about this aspect of our development that I most particularly write. We require a building of approximately 132,000 gross square feet which will cost an estimated 5.1 million dollars. A site south of the Medical School in the old Victory Village area, has been selected. At first, we contemplated an application for matching funds from the Health Research Facilities branch of NIH, using non-appropriated funds of the University as the local share. To this end architects went to work, underwritten to the extent of \$22,000 by the Medical

School. The rising costs of our other building projects, however, made it necessary to apply to these the University resources on which we had counted, and the matching grant possibility was no longer available.

Next, in the Spring of 1966, we learned that NIH was investigating the possibility of changing the funding mechanism for our Center from grant-in-aid to contract basis. With contract funding, the NIH could itself construct in Chapel Hill the necessary building which the University would operate under contract. In the Summer of 1966, it was established that the NIH does indeed have the required contract authority and the only question remaining was the availability of funds. Last Fall, when the HEW appropriation was made, we were informed the funds were not available in the NIH budget for fiscal 1967. Furthermore, in recent conversations with the administration of NIH I have been informed that analysis of the budget for fiscal 1968 as proposed by the President also contains no funds which could be used to construct the Pharmacology-Toxicology facility.

Thus, we are at an impasse. We are continuing development of the Center in trailers and in rented laboratory space but we want to get on with plans for the permanent facility. Unless we do so, we cannot fulfill our commitment to the national purpose in this vital area of health.

My question of you is: What is the possibility of inclusion in the appropriations to NIH for funds for fiscal 1968 adequate for construction of the facility needed here in Chapel Hill? I am, of course, sensitive to the multitude of needs which compete for public funds and the necessity for establishing priorities. Nonetheless, as one who devotes his career to the health of the State and nation, I am convinced of the importance of getting on with development of the program in Pharmacology and Toxicology.

I shall appreciate your assistance and advice. Please let me know if you require additional information. I shall be happy to come to Washington to discuss this matter directly if you deem it advisable.

With best regards,

Sincerely yours,

ISAAC M. TAYLOR, M.D., *Dean.*

Dr. SHANNON. That would be part of the funds requested under the appropriation of the National Institute of General Medical Sciences. Some 3 years ago, as the result of extended negotiations with the University of North Carolina, a determination was made that they had the leadership capability to permit the evolution of a very important unit that would be part of a national network of centers for the study of pharmacology and toxicology. These units, on the one hand, were to underpin some of our activities in the field of environmental health and, on the other hand, they would underpin our efforts to develop therapeutic agents and gain a better understanding of toxicity.

It was thought that these activities were so important, nationally, that they should receive preferential matching for construction. Indeed, when the Health Research Facilities Construction Act was reviewed some 2 years ago, it was proposed that it should include, in addition to the basic construction activity that Dr. Kennedy spoke to, certain preferential matching for areas such as aging and pharmacology-toxicology.

The House committee, considering the overall matter, deleted the preferential matching provision but agreed to the provision of research contract authority that incorporates the title X authority for construction necessary to the performance of the contract.

However, Senator Hill, we have never had enough contract money in the funds for the National Institute of General Medical Sciences to permit construction at the University of North Carolina of such a necessary national resource. As they are not in a position to take

advantage of the research facilities construction program we would be willing to support this activity, if they could arrange to have it built from private sources, by paying rent that would enable them to amortize the building over a reasonable period of time.

Senator HILL. Yes.

Dr. SHANNON. I might say, however, that the budget of the National Institute of General Medical Sciences will only make it possible to do this at the expense of other elements of the program. That is the situation we find ourselves in right now.

Senator HILL. Did you request any money for this?

Dr. SHANNON. Yes, sir, we requested substantially more than —

Senator HILL. Than you got.

Dr. SHANNON. Yes. You may recall that Dr. Stone reported to you that the available research grant funds this year will fall something like \$13 or \$14 million short of the approved applications. His anticipated backlog next year will be roughly the same order of magnitude. That is why I say that if we elect to go forward, as I think we should, it will have to be at the expense of the other programs of the Institute.

Senator HILL. Yes.

LETTER REQUESTED FROM UNIVERSITY OF NORTH CAROLINA

Dr. SHANNON. I might say, we have told the University of North Carolina to send a formal letter of inquiry as to the intent of this Institute relative to this operation.

Senator HILL. Yes.

Senator Jordan enclosed a copy of a letter you had from Isaac M. Taylor.

Dr. SHANNON. He is the dean of the school.

Senator HILL. Yes. I am going to turn this letter of Senator Jordan's and the letter of Dr. Taylor over to you. If you have anything else that you would like to add, I wish you would let us have it.

Dr. SHANNON. We would be very glad to, sir.

Senator HILL. General Stewart, anything you would like to add?

Dr. STEWART. No, sir, I don't think so.

Senator HILL. Anything you gentlemen would like to add?

Dr. PRATT. No, sir.

Senator HILL. How about you?

Dr. SPECHT. I have had it said for me, sir.

Senator HILL. I see.

Dr. SHANNON. Could I add something sir, before you close off?

Senator HILL. Surely.

Dr. SHANNON. It is indeed a pleasure to be with you again.

Senator HILL. It is always a pleasure to have you here, sir. Delighted.

Off the record.

(Discussion off the record.)

(Dr. Shannon indicated, on p. 1742, that the NIH was working on a special report on public information activities which he would like to submit for the record upon its completion. The report follows:)

SPECIAL REPORT: NIH PUBLIC INFORMATION ACTIVITIES

BACKGROUND

Since World War II, the National Institutes of Health has undergone dramatic changes in organization, size, content, and scope of its programs. In 1946, when it acquired 66 contract-supported projects from the wartime Office of Scientific Research and Development, it was primarily concerned with the conduct of fundamental research in the biomedical sciences on a limited scale.

With the encouragement and support of the Congress, the NIH broadened its concern to include the provision of Federal funds for support of research and research training related to the major health problems. Of prime importance in establishing a national base of scientific inquiry in biomedicine was the need not only to involve many segments of the scientific community in the decision making process but also to administer the grant programs in such a way that support would be based on scientific merit and program need and that Federal controls or intervention would not thwart the normal processes of scientific investigation.

These considerations formed the primary backdrop for the decision that the principal lines of communications between and among scientists and their institutions would be preserved and that as far as possible the NIH would assume responsibility for assaying the results of the public's investment in this venture and report periodically to the Congress. In this way, the need for public stewardship would be served and the public's hopes would not be unduly raised by individual reports of findings that were far from general application.

At that point in NIH's history, its budget totalled \$3 million, it employed 1,400 personnel, none of whom had primary responsibility for communicating with the press or general public. Information specialists were first employed at NIH when the first categorical institutes (in addition to the National Cancer Institute) were formed in 1948. Although these staffs were given general responsibilities for all types of public information functions, they were necessarily preoccupied with information materials for other elements within the Federal structure. In the case of progress reports for the Congress, these were published as a matter of public record and formed the basis for news and feature stories in the general press. Concurrently, grantees and their institutions were free to publish on NIH-supported work and even if the work was of sufficient interest to warrant attention in the general press, they were not encouraged to associate the publicity with support from NIH.

In the mid-1950's, as the combined appropriations for NIH surpassed the \$100 million level, increased concern was expressed by Congress and others over the lack of information as to where grant funds were being used and as well as what results were emerging as a result of this support. In 1956, information activities were reorganized and given greater emphasis and support:

A mechanism was developed for the orderly collection and regular release of all pertinent data on grants and awards.

Special efforts were made to improve working relationships with information directors of the grantee institutions to obtain their assistance in achieving a greater public appreciation of NIH support of medical research and related activities.

Expanded volumes of highlights of research and special reports on research under way were released to a wider spectrum of audiences.

Efforts were begun to train recent college graduates in the several phases of information activities at NIH.

Despite these increased activities aimed at making more information available about NIH and its programs, the institutional posture of NIH was such that the initiative for feature stories and other public information projects almost without exception came from the outside information media. It is perhaps worth noting that even though NIH rarely took the initiative in publicizing itself or its programs, it acquired a reputation among the news media for its cooperation and maintenance of an open-door policy. In fact, one magazine characterized NIH—from the public information standpoint—as being “the most wide-open agency in Washington.”

As the NIH entered the present decade and with its total appropriations approaching the \$1 billion level, it became apparent that it could no longer depend

upon a relatively narrow base of understanding within the scientific community and the Congress. To achieve and maintain a level of public understanding that would support NIH's expanding programs a number of adjustments have been made to meet this new responsibility. These adjustments have been made in a gradual and evolutionary way—mindful of the fact that support of science depends upon the enlightened public and that the productivity of science depends upon the intellectual freedom of the scientist. Other factors related to the effort to take more initiative in making more information available regarding NIH and its programs were (1) increasing interest on the part of the general public in the problems, processes, and progress of medical science, (2) increasing levels of reporting—both qualitative and quantitative—on the part of the press, and (3) increasing confidence of the scientist in the ability of the press to interpret and translate scientific materials for the public.

CURRENT ACTIVITIES

With this background, a number of special public information efforts were undertaken. These included but were not necessarily limited to increased activities in the following areas:

- Special interviews for newspapers and magazine writers with program leaders.

- Publications reflecting latest known facts about diseases and conditions of high interest to the public.

- A regular news service for professional journals.

- Feature service, including photographs for magazines and journals.

- Weekly 600-word column for weekly and small daily newspapers on current research.

- Special bi-weekly news and feature service for community newspapers in the Washington (D.C.) area.

- Monthly health research features for radio stations.

- Quarterly public service announcements for radio stations.

- Film programs for exhibit and television use.

- Further improvement of working relationships with grantee institutions.

- Inauguration of seminar series for science writers.

- Expansion of information training program.

It should be borne in mind that these activities are in addition to those that are often conducted in response to requests for information services such as preparation of reports, speeches, articles, news releases, responses to inquiries; the provision of advice and assistance of designing and manning of scientific exhibits; the arrangement of interviews of scientists by the press; the policy review of staff-produced articles prior to publication and the assurance of the free flow of requested information to the public.

With the increase in size of the appropriations made available to the several Institutes and the addition of a number of relatively large programs not directly identifiable with one particular Institute, it became necessary for NIH to converse more publicly concerning the total impact, the directions and trends, and to outline goals in terms of the totality of all NIH-administered programs. Consequently, through interviews with the Director and his immediate staff, numerous articles in national magazines have been published in recent years covering the broad range of science policy, national biomedical research programs, and science administration. This is in contrast to virtually exclusive publication of such materials in the scientific and academic literature from the mid-forties through the sixth decade. Articles published in 1966 in national magazines dealing not only with the broad aspects of medical science but also specific achievements as a result of NIH support of science are contained in attachment A.

Although NIH, as the bureau of the Public Health Service primarily responsible for the conduct and support of research, has never had a clear mandate for the preparation and release of health education materials, the nature of requests for information from the public on general health matters (in terms of on-going research) has made necessary an extensive publications program. A particularly noteworthy example of the response to this need has been that of the National Institute of Neurological Diseases and Blindness through their public pamphlet

series "Hope Through Research." Representative titles published in this series include:

- Cataracts and Glaucoma
- Epilepsy
- Hearing Loss
- Little Strokes
- Mental Retardation
- Muscular Dystrophy
- Parkinson's Disease

All the Institutes and Divisions maintain similar—though some less formal—publication programs. All, however, are designed to be responsive to the thousands of requests for information that come to each component throughout the year. In 1966, 64 new publications were prepared. 82 publications were revised, and over 2½ million copies were distributed.

In the early sixties, as it became apparent that NIH should take more initiative in the collection and dissemination of news concerning its activities. It was perhaps only natural that the first major effort should be directed to the scientific and academic community. Known as News Service for Professional Journals, this effort began on a trial basis with one journal, was gradually extended to some 62 journals and magazines having a combined circulation of over 5 million, and now includes regular users in Australia, Great Britain, and West Germany. In addition to the regular collection and reporting of news each month for these periodicals, the service now includes a photo feature service, which has proved popular among recipients.

In late 1964, NIH sought to increase the numbers of the general public who might have the opportunity to learn more about the activities and accomplishments of health research. Accordingly, a 600-word weekly column entitled "Research for Health" was offered on a trial basis to small weekly newspapers throughout the nation with only fair results. These columns were carefully prepared to reflect the current research activities under way in discrete areas of health concern as opposed to either straight reporting of news or provision of advice. Subsequently, these columns have been offered to small daily newspapers with somewhat better success. At present, approximately 64 newspapers throughout the nation are regular subscribers to this weekly service.

To improve understanding of NIH in the metropolitan area of Washington, D.C., a special news service has recently been extended to 13 suburban newspapers (11 weekly, two daily). Included are news, features, and personal items selected and especially prepared for the interested general public in the area. Items cover topics of general interest that may not have been picked up by the metropolitan dailies and highlight the participation of Federal employees who reside in the area.

Radio and television, as media having a great potential for reaching mass audiences, have, with few exceptions, remained outside the direct information efforts of NIH. Nonetheless, a wide range of participation by the staff in both radio and television during 1966 provides some encouragement to exploit opportunities to inform the public. (See attachment B.)

In the summer of 1966, NIH engaged the services of a television consultant to explore opportunities in the field. Among other things, a series of seminars was held for the information staff in which a number of experts from the television industry cooperated and provided their views on virtually all aspects of the field and pointed up the opportunities as well as obstacles in using the medium.

Pilot efforts in preparing filmed programs for use on television took primarily two forms in the past year:

- (1) Color filmed program for half-hour television segment, distributed area-by-area and promoted for use in prime time and involving cooperation and support of local medical authorities. Secondary exhibit use with special groups.

- (2) Black and white filmed program for half-hour segment on educational television—designed to achieve full coverage of the educational network within a two to three month period.

Current plans call for expansion of television activities to include making available film footage on current medical research subjects to members of the Senate who use television as a medium for reporting to their constituents. The same materials may also be utilized to meet requests of expanding news presentations now being undertaken by TV stations in certain areas.

In 1966, a new program was established to make available information on a regular basis to radio stations. Initially, the once-per-month service was offered to a readily available list of radio stations widely representing all areas of the country. Response from the stations exceeded expectations and served as a basis for offering the service to all AM and FM stations. As of March 1, 1967, requests have been received for this material from 1,054 radio stations—one quarter of the nation's radio stations in each of the 50 states and the District of Columbia.

RELATED ACTIVITIES

The successful operation of a public information program that seeks to be responsive to the public interest requires a continuous exploration of new opportunities to be of service in the present. It also requires similar exploration of new activities that can be undertaken in the future to serve the public interest better. Efforts along these lines have gone forward not only in respect to direct activities carried out by NIH information staff but also those activities which require the enlightened participation of others.

Improved cooperation and liaison with public information directors of the principal institutions in which grant-supported work is being carried on have increased immeasurably in recent years. Working through such organizations as the Association of American Medical Colleges and the American College Public Relations Association, the public interest has been advanced by developing better understanding and improved working relationships between the non-Federal institutions and the information staffs of NIH. Through these arrangements, the public has a much greater opportunity to learn about the results of health research made possible by appropriated funds.

Efforts have also been made to assist the science writers, who have the responsibility for translating the results of research for the understanding and use of the layman. Two-day seminars have been held at NIH for science writers on scientific subjects of emerging importance. Scientific staffs for these seminars have been largely NIH scientists, but on occasion have also included expert specialists from other institutions as well.

The one-year on-the-job training program for beginning public information specialists and science writers, begun in 1958 with an annual input of three, has been expanded to five per year. In the past eight years, 28 have entered the program and 23 have successfully fulfilled the requirements and accepted full-time career positions.

Although the bulk of training activities have centered around the beginning and junior members of the information staff, it is planned to give greater attention to the needs for career development activities in journeyman and senior positions. For example, a staff scientist has agreed to plan and conduct a course in cell biology especially designed for the science writer.

SUMMARY

NIH public information activities have changed and expanded over the years as the posture of NIH and the biomedical research community toward public information changed. While always responsive to specific requests—from the press, the public and the Congress—for information, it was not until the mid-1950s that NIH information activities were given sufficient emphasis and support to emerge as programmed activities, although much of this was still necessarily in the form of information services for administrative activities. Subsequently, increased appropriations to the Institutes, increasing public interest in research generally and medical research in particular, increasing numbers of informed and capable science writers for the media, and increasing Congressional interest in publicity for NIH programs and research results led to further expansion of NIH information efforts directed specifically to the general public. It is difficult to assess the impact on public knowledge and understanding

of NIH programs resulting from a specific public information activity. However, the attached table of NIH information statistics provide a measure of some of the activities for calendar year 1966 (attachment C).

Major magazine features, NIH, 1966

[Attachment A]

Month	Magazine	Title
January.....	Today's Health.....	Those Pesky Mouth Sores.
February.....	U.S. News & World Report... Life.....	What Expectant Mothers Need to Know. The Virus Enemy.
March.....	Today's Health..... Rotarian.....	The Mystery Gland. Spare Parts for Human Machinery.
April.....	Laboratory Management..... Parade.....	Entire issue on various aspects of NIH activities. Prisoners Who Serve More.
May.....	New York Times magazine..... National Geographic.....	Giant Steps in Baby Research. Capturing Strange Creatures in Colombia.
June.....	Saturday Evening Post..... Family Circle.....	The Thing That's Going Around. What Hope for the Allergic.
July.....	Business Week..... Today's Health.....	Getting at the Cause of an Incurable Ill. Tracking Down the Causes of Birth Defects.
August.....	Popular Mechanics.....	More Comfort for You at the Dentist's.
September.....	New York Times magazine.....	Malaria Wins Round Two.
November.....	Look..... Parent's Magazine.....	Five Million Brain-Damaged Children Can Be Helped What Do You Know About Cleft Palate?
	Saturday Evening Post.....	Crib Deaths: Search for a Mystery Killer.
	Life.....	Superplan to Cut Years off the War (on Leukemia).
December.....	Saturday Evening Post..... Business Week.....	The Search for the Invisible Killer. General in the War on Disease.

[Attachment B]
Radio and television participation, NIH
TELEVISION

Broadcaster	Participant	Subject	Date
FILMS			
Independent stations	NCI staff and grantees; other researchers.	"The Savage Cell—Leukemia"	November,
National educational television	do.	"The Search for Cancer Viruses"	December 1966.
WETA, channel 26.	Dr. William Mason, director of animal behavior, Delta Regional Primate Research Center, Covington, La.	"Childhood of the Chimpanzee"	Oct. 28, 1966.
Do.		"Spectrum"	Dec. 2, 1966.
INTERVIEWS			
ABC, CBS, NBC, WGN-Chicago.	Drs. Harry M. Meyer and Paul D. Parkman, Laboratory of Viral Immunology, DBS.	Experimental rubella vaccine and rubella immunity test.	Oct. 27, 1966.
CBS-Chicago.	do.	do.	Do.
NBC-WRC, channel 4.	Dr. William L. Ashburn, Department of Nuclear Medicine, CC.	NIH tetrascaner biomedical instruments.	Nov. 12, 1966.
WRC, channel 4.	Dr. James Patrick, NICHD contractee at Children's Hospital, CC.	Sudden infant death.	Oct. 11, 1966.
WMAL, channel 7.	Dr. John L. Decker, Chief, Arthritis and Rheumatism Branch, NIAMD.	Research on arthritis at NIH	Dec. 13, 1966.
WRC, channel 4.	Dr. Lester Goodman, Chief, Biomedical Engineering and Instrumentation Branch, DBS.	Biomedical instrumentation.	Sept. 23, 1966.
NBC, WGN-Chicago.	Dr. Roderick Murray, Director, DBS.	Measles immunization	Feb. 25, 1966.
Local station, Syracuse, N. Y.	Mr. Karl D. Yordy, Assistant Chief, DRMP.	Interview, Onondaga County Heart Association on regional medical programs.	Feb. 5, 1966.
Local station, Charlotte, N. C.	Miss Edith Jones, chief dietitian, CC.	Kiloree interview. Dibs for adults and school lunches.	Mar. 24, 1966.
WFLD, WCFL, and local stations associated with NBC, CBS, and ABC.	Dr. William F. Caverness, Associate Director, NINDH	NIAMD research in allergic disorders and immunology.	Feb. 24, 1966.
NBC-WRC, channel 4.	Dr. James Colbert, Associate Director, NIAMD.	Discussed LSC.	Aug. 12, 1966.
NBC.	Dr. Jerome Levine, NIMH Psychopharmacology Service Center.	do.	Mar. 29-30, 1966.
CBS Network.	Dr. Stanley Yolles Director, NIMH.	Monograph on sleep and dreams.	May 17, 1966.
WMAL, channel 7.	Mrs. Gay Luce, NIMH writer.	Community mental health centers.	Feb. 11, 1966.
ABC, Chicago.	Dr. Stanley Yolles, Director, NIMH.		Jan. 14, 1966.

NEWS REPORTS

WBAL, Baltimore.....	Dr. Richard L. Masland, Director, NINDB, and Dr. Heinz Berendes, Chief, collaborative perinatal project, NINDB.	90-minute documentary on the perinatal period of life.	Oct. 24, 1966.
WRC, channel 4.....	Material supplied by CC Information Office.	Surgical wing	Dec. 12, 1966.
WMAL, channel 7.....	Rev. Robert I. White, CC chaplain, and Mrs. Margaret Lanson, nurse, epidemiologist, CC.	Christmas program: "Behold, a Child Is Born"	Dec. 25, 1966.
All networks.....	Linda Coburn, nurse; Mrs. Frances H. MacCallum (as patient).	Cancer subject in cooperation with American Cancer Society and NCI.	Release in May.
WRC, channel 4.....	Dr. Kenneth M. Endicott, Director, NCI.	"The Cancer Problem Today"	Apr. 10, 1966.

RADIO

Distributed to 350 stations National educational radio.....	Dr. Carl G. Baker, Associate Director for Program, NCI—13 programs distributed to 56 stations during 1st quarter of 1966 by NCI.	The cancer problem today Research report.....	After Apr. 10.
WTOP Newsline.....	Dr. Bruce Ames, Laboratory of Biochemistry and Metabolism, NIAMD.	Genetics research.....	Sometime during week of Mar. 14-18.
Do.....	Dr. Jules Gladner, Laboratory of Biophysical Chemistry, NIAMD.	Blood clotting.....	Do.
Do.....	Dr. Paul J. Schmidt, Chief, Blood Bank, CC.	Blood bank.....	Do.
Do.....	Mr. Clifford F. Johnson, Chief, ORI.	NIH	Do.
Do.....	Dr. Phillip Ross, United States-Japan program, OIR.	International centers for medical research and training.	Do.
46 commercial stations ABC.....	NCI staff.....	"Research Report" on Cancer.....	July-December 1966.
All Chicago networks.....	Drs. Harry M. Meyer and Paul D. Parkman, Laboratory of Viral Immunology, DBS.	Sudden infant death.....	Oct. 6, 1966.
Voice of America	Do.....	Experimental rubella vaccine and rubella immunity test.	Oct. 27, 1966.
WATV radio (CBS) Birmingham.....	Dr. Francis L. Schmechel, Chief, Health Research Facilities Branch, DRFR.	Health research facilities program.....	Nov. 9, 1966.
240 commercial stations National educational radio stations.....	NCI staff.....	"Countdown on Cancer"	December 1966.
	Dr. Betty E. Hatlaway, Chief, Diagnostic Radiology Department, CC.	"Cancer Diagnosis: A Research Challenge"	Different dates in various localities.

2150 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

[Attachment C]

NIH information statistics, calendar year 1966

MATERIALS	
Press releases:	
General	53
Announcements	101
Science writer	71
Press summary	116
Total	341
Inquiries:	
Press	2,705
Public	¹ 78,019
Congressional	1,300
Total	82,024
Publications:	
New	64
Revised	82
Distributor	2,531,532
Speeches prepared	123
Reports Prepared	542
Exhibits presented	74
Press rooms staffed	13
Films for general public	4
TV and radio appearances	24
Magazine articles (national circulation)	23
Personnel:	
Professional	² 87
Clerical	³ 61

¹ Includes only those inquiries requiring formal, structural response.² Includes 11 members of information staff of NIMH, transferred from NIH Jan. 1, 1967, and 4 information interns.³ Includes 9 NIMH clerical staff transferred from NIH Jan. 1, 1967.

SUBCOMMITTEE RECESS

Senator HILL. Well, I want to thank you gentlemen very much for your testimony. We deeply appreciate it. It is always mighty good. Thank you, sirs.

(Whereupon, at 12:40 p.m., Thursday, May 4, 1967, the hearing was recessed, subject to call.)

DEPARTMENTS OF LABOR AND HEALTH, EDUCATION,
AND WELFARE, AND RELATED AGENCIES APPRO-
PRIATIONS FOR FISCAL YEAR 1968

TUESDAY, JUNE 6, 1967

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:10 a.m., in room 1224, New Senate
Office Building, Hon. Lister Hill (chairman) presiding.
Present: Senator Hill.

DEPARTMENT OF HEALTH, EDUCATION, AND
WELFARE

NONDEPARTMENTAL WITNESSES

MENTAL HEALTH PROGRAMS

STATEMENTS OF MIKE GORMAN, EXECUTIVE DIRECTOR, NA-
TIONAL COMMITTEE AGAINST MENTAL ILLNESS, WASHINGTON,
D.C., AND DR. FRANCIS J. BRACELAND, SENIOR CONSULTANT, IN-
STITUTE OF LIVING, HARTFORD, CONN.; ACCOMPANIED BY DR.
JOSEPH MATARAZZO, CHAIRMAN, DEPARTMENT OF MEDICAL
PSYCHOLOGY, UNIVERSITY OF OREGON MEDICAL SCHOOL

PREPARED STATEMENT

Senator HILL. The committee will kindly come to order.

Off the record.

(Discussion off the record.)

Senator HILL. On the record.

All right, Mr. Gorman, we will be glad to have you proceed.

Mr. GORMAN. Mr. Chairman, I have a prepared statement that I
shall not flagellate you with, sir.

Senator HILL. Do you want to have it appear in the record in full
at this point?

Mr. GORMAN. I would like to, sir.

Senator HILL. All right, it will appear in full in the record at this
point.

(The statement follows:)

THE CRITICAL NEED FOR STAFFING MONEYS FOR MENTAL HEALTH CENTERS

Mr. Chairman and members of the committee, progress in the fight against
mental illness has been most heartening in the year since I last testified before

this committee. In fact, I think there is general agreement among all of us in the mental health field that in 1966 more headway was achieved than in any year since the establishment of the National Institute of Mental Health in 1946.

Most significant was the record breaking drop of 24,000 patients resident in our state mental hospitals. This was the first year in which we reached President Kennedy's goal of a reduction of at least five percent per year in the number of people hospitalized in these institutions.

In the eleven years since the introduction of a variety of psychotropic drugs, we have achieved an over-all reduction in state mental hospitals of 106,000 patients. This is close to 20% below the 1955 patient population figure; it brings us within sight of the 50% reduction in state hospital populations by 1973 which President Kennedy envisaged in his historic 1963 mental health message to the Congress.

Mr. Chairman, I think it is important to recall that in the period prior to 1955, we were *adding* 13,000 patients a year to our already over-crowded state hospitals because we had no effective therapies to reverse this seemingly inevitable trend. If this pattern had continued, we would now have more than 700,000 patients in our state mental hospitals this year, as against the 452,000 who are now in residence. At a very conservative estimate, this would have cost the states an additional \$2.5 billion in patient care expenditures and \$4.5 billion for the construction of new hospital beds.

This is the era of benefit-cost ratios, cost-effectiveness and systems analysis. We are frequently reminded, in a tight budget year resulting from commitments abroad, that we must be prepared to justify every dollar which is requested. We are happy to do so. The billions of dollars we have saved the states over this eleven-year period exceed the total budgets of the National Institute of Mental Health over this same period by a ratio of more than five to one—in other words, for every dollar we have received in these mental health programs, we have returned more than five dollars in terms of hospital construction and operating savings and in the additional productivity of thousands upon thousands of our people.

This committee, and its sister committee in the House, have played a major role in these accomplishments, frequently going beyond inadequate Administration budget recommendations. The Congress has supported drug research and evaluation programs and accelerated manpower training efforts which together have made the real difference in transforming dreary custodial institutions into therapeutic hospitals which return 80% and more of first admissions to society within six months to a year.

As the capstone of this dramatic revolution, we are now making the big move into community mental health. Aware of the fact that only one in five patients today is treated in a state mental hospital—as against three out of four just two decades ago—we are in the early stages of building a network of mental health centers designed to provide early, easily accessible treatment to those of our citizens who require it. But we cannot achieve our objective without more research knowledge and a vastly increased reservoir of trained professional and non-professional workers.

Mr. Chairman, we therefore propose a carefully worked out budget of \$293.-\$60,000 for the National Institute of Mental Health during the coming year—an increase of approximately \$45 million over the very restrictive budget recommended by the Administration.

At this point, I would like to highlight the major items in our proposed budget:

RESEARCH

Regular Grants

The Administration proposes an increase of less than \$5 million to encompass all of the far-flung research activities of the Institute.

In sending up such an inadequate recommendation, the Administration ignores a number of carefully documented reports over the past several years which indicate that the level of research support must be increased by at least 15% a year to handle both rising salary and equipment costs and to allow for a small percentage of new research projects. As last year's House Appropriations Committee report noted, the non-governmental National Academy of Sciences, after a fifteen-month study, reported to a House Committee that a 15% annual increase was the minimum needed for any forward momentum. Furthermore, a Task Force of the President's own Science Advisory Committee corroborated the conclusion reached by the National Academy of Sciences.

A careful analysis of the budget indicates that the President's so-called "increase" will allow for only 14 entirely new research projects in fiscal 1968. As one who is now serving a second term as a member of the National Advisory Mental Health Council, I very frankly dread the consequences if this budget is sustained. We will have to go through the painful motions of approving scores of applications on scientific merit, and then informing the respective investigators that although we all make speeches about the need for more psychiatric research, we must turn down their projects because we lack the funds.

This tight research budget is all the more puzzling since, with the achievement of Bureau status by the National Institute of Mental Health, it has been asked to either initiate or expand a number of specialized mental health endeavors. For example, the Institute is now exhorted to develop comprehensive programs in the fields of alcoholism, narcotics and drug abuse, suicide prevention, childhood mental illness, crime and delinquency, metropolitan mental health problems, and so on.

Mr. Chairman, these are all important areas, but how can we take any meaningful steps with the Administration budget restricting us to 14 new projects for the coming year? Let me illustrate by citing just a couple of specialized areas where we should, but will not be able to, make any major advances:

Alcoholism

The Administration budget proposes \$4.5 million in research and demonstration projects in the field of alcoholism for the coming year. This is \$212,000 over this year's budget—hardly enough to finance even one of the many regional alcohol research centers which the Institute has been urged to activate in fiscal 1968.

There are many who contend—and I find it difficult to disagree with them—that alcoholism is the biggest public health problem in this country today. It is estimated that there are between five and six million alcoholics in the United States; if one includes their families, more than twenty million people are caught up in the web of this malady. It is almost impossible to give a full rendering of the human suffering, the families broken up and the fantastic economic cost of this disease to industry.

Recent studies indicate that the life expectancy of the alcoholic is ten to twelve years less than that of the average person. We have figures from some states which indicate that communities spend \$50,000 to \$100,000 in support of an alcoholic and his family during his lifetime.

In an enlightened departure from past views, the medical profession now proclaims that alcoholism is a disease. However, we know precious little about treating this sickness. In some jurisdictions, courts now require chronic alcoholics to be treated rather than jailed, but in actual fact this treatment consists largely of drying out the alcoholic and getting him back on his feet until the next bout of alcohol and the next re-admission.

There is a consensus among leading investigators in the field that we need chemical agents effective against this addiction. Despite the cries of the skeptics, research investigators have developed a number of chemical agents against the most refractive kinds of mental illness, including schizophrenia. Despite the cries of the skeptics, a new core of investigators is making initial inroads upon various forms of mental retardation.

All of these problems were previously considered hopeless. We are just beginning to lift the cloud of hopelessness surrounding alcoholism; we must therefore have funds to support widespread investigations.

At the present time, Rutgers University has the only multi-disciplinary research center for the study of alcoholism. It is my understanding that over the next year or so, the Institute will be asked to finance an additional ten to twelve regional alcoholism centers.

A careful assessment of the need, combined with a touch of realism concerning the present fiscal climate, limits us to requesting an additional \$4 million over the budget for research and demonstration projects in alcoholism during fiscal 1968.

Narcotics and drug abuse

We are faced here with a problem of inadequate data on the extent of addiction to narcotics. The estimate of 60,000 users of narcotics is generally regarded as very low, since it is drawn almost exclusively from reports by law enforcement agencies. New York State, which is now developing a comprehensive program in this field, estimates that there are 40,000 narcotic addicts in that state alone.

As most of you know the Congress, upon the recommendation of the President, enacted the Narcotic Addict Rehabilitation Act of 1966. It provides for fairly

liberal authorizations for various approaches to the problem of narcotic addiction, but the actual budget recommendations for both the current year and fiscal 1968 are grossly inadequate in terms of meeting the objectives of the new legislation.

At the request of the Administration, the National Institute of Mental Health set up a new Center for the Studies of Narcotic and Drug Abuse. The mandate is fine, the title of the Center is impressive, but the funds for the studies are not there. For fiscal 1968, the Administration recommends \$3,900,000 for drug addiction—only \$664,000 over the current year.

In combing the literature and in talking to the small band of scientists interested in this field, I find general agreement that constructing a network of facilities to get the addict off the streets is not the answer. Even if he is successfully withdrawn from the drugs while confined, there is overwhelming evidence that he soon returns to the habit when he is released. New York State is currently planning to spend approximately \$250 million to construct and operate these detention camps for addicts. Years ago, New York did the same with the mentally ill, and it is today saddled with a number of monstrous human warehouses in the 5,000 to 10,000 bed range.

Buildings weren't the answer for the mentally ill then, and they are not the answer for drug addicts now.

The small amount of research conducted on drug addiction over the past few years has resulted in the development of several drugs which show promise as antagonists to the harmful and powerful narcotics—they either substitute for them or reduce the craving of the addict for them. There is considerable hope that intensification of this research can, and will, produce agents powerful enough to break the addictive process.

We therefore recommend an additional \$4 million over the Administration budget to transform the Center for the Studies of Narcotic and Drug Abuse from a hollow shell into an exciting reality.

Depressions

Depression is one of the most difficult and most disabling forms of mental illness. While there are no really precise statistics on the number of people suffering from depression in this country today, there is a fairly widespread view among the professionals that depressions not only claim a vast number of our hospital beds, but are also one of the most refractory problems confronting both psychiatrists and general practitioners of medicine.

I had the privilege of attending the 4th World Congress of Psychiatry in Madrid last year; I heard papers from distinguished psychiatrists in all parts of the world emphasizing the point that depression was not only the most common form of mental illness, but also one of the most costly health problems in terms of reduction of human productivity.

Over the past year, in an effort to mobilize a research offensive against this illness, the National Institute of Mental Health called in experts in this field who now compose a task force charged with devising new research approaches effective against depression. It is my understanding that the task force has recommended the sum of \$4 million as an initial step in achieving its objective: we therefore recommend that this amount be added to the research budget of the National Institute of Mental Health to get on with this very important work.

The problem of suicide prevention is closely related to the aforementioned endeavor in the field of depression. On the basis of incomplete reporting, it is estimated that there are 20,000 suicides each year—the tenth leading cause of death in our country. In recognition of this fact, the National Institute of Mental Health last year set up a Center for Studies of Suicide Prevention. Its budget during the current year is \$2,335,000; the Administration proposes an increase of only \$265,000 for the coming year.

The new Center hopes in the next several years to develop a number of regional centers, connected with universities, to serve as both research and training facilities. With the money currently available to it, the Institute has been able to plan for only one additional center in the coming year. We therefore recommend an additional \$1 million so that more of these desperately needed centers can be started.

In summary, Mr. Chairman, we recommend an additional \$13 million over the Administration budget to finance manifest research needs in the fields of alcoholism, narcotics and drug abuse, depression and suicide prevention.

HOSPITAL IMPROVEMENT GRANTS

As originally envisioned in 1963, this program was designed to lift the quality of care for the forgotten patients in every one of our state mental institutions. Under the original Kennedy program, we were to reach a level of \$36 million in the third year of this program. However, the Administration recommendation for the coming year is only half of this sum, of which \$10,610,000 is allocated to the National Institute of Mental Health and the remainder to the Division of Mental Retardation.

Under present fiscal limitations, we are only able to reach about half of all state hospitals. Those hospitals which cannot be reached are being deprived of an enormous set of resources. For example, figures on the first three years of the program indicate that those hospitals which have received awards have increased their discharge rates significantly and have added thousands of additional personnel who are doing a magnificent job with elderly patients, children and adolescents, alcoholics and many other groups previously neglected because of shortages of staff and funds.

If the Administration recommendation is sustained, we will not be able to add a single hospital to this exciting program in fiscal 1968. We therefore recommend \$6 million over the budget figure so that this highly successful program can reach thousands of additional mental patients.

TRAINING

This committee has been constantly concerned with critical shortages of mental health manpower. Over a period of years, it has appropriated monies over and above Administration budgets to see to it that the mental health field would be in a position to recruit and train the enormous numbers of people needed for service activities in hospitals, clinics, and the community at large.

Last year, emulating the discouraging pattern of the two previous years, the National Institute of Mental Health was unable to finance the training of close to 2,000 willing recruits in the mental health disciplines, even though their qualifications had been screened and scientifically approved by technical study sections.

On the basis of this evidence, the Congress ordered the National Institute of Mental Health to present to it this year a realistic assessment of mental health personnel needs over the ensuing five years. May I quote the committee language in this matter?

"A major problem confronting mental health programs all across the country is the critical shortage of trained manpower in the mental health fields. In 1963, the Committee was told that the Nation would require 87,000 mental health professionals by 1970, and that annual increases of \$15,000,000 for training activities would be required if this goal was to be attained. Not once in the ensuing three years has such an increase been requested, although no one has seriously questioned the wisdom of investing such sums in training. There also seems to have been no serious question about the availability of persons to be trained. The Committee feels that it is now a matter of some urgency that those concerned with developing estimates for the training programs should concern themselves with the possible consequences for future victims of mental illness and for the community at large if sufficient numbers of trained professionals are not available to meet the expected needs. At next year's hearings, the Committee will expect a fresh assessment of the requirements for mental health personnel, by professional and sub-professional categories, five years hence and a realistic plan, including estimates of the funds required, for meeting these requirements."

After a thorough, year-long study in which it gathered statistics from the major professional groups and from every mental health facility in the 50 states, the NIMH developed a factual answer to the committee directive. It reported that there were approximately 67,000 people working in the four core mental health disciplines—psychiatry, clinical psychology, psychiatric nursing and social work—at the present time; it projected the need for 100,000 of these workers by fiscal 1972. In order to achieve this increase in manpower, it estimated that \$114,150,000 would be needed in fiscal 1968 and that, in the fifth year of the program, approximately \$187 million would be required.

The Administration seems to have paid little attention to this Congressionally directed report. It recommends only \$100,762,000 for all of the training activities of the NIMH—a claimed increase of \$8 million over this year. However, manda-

tory increases in the costs of training projects begun in previous years are \$11 million higher than a year ago so that, in actual fact, the NIMH will be able to award 110 *less* new training grants for the coming year than in the current year.

But statistics hardly tell the story. Just a few weeks before his untimely death, Congressman John E. Fogarty, who had done more than any member of the House to increase funds for mental health manpower, received a letter from Mr. William Forrester, Director of Personnel for "The Pittsburgh Press." Congressman Fogarty shared this letter with me, and I would like to quote a few comments from a dedicated person who sees the stifling effect of manpower shortages at the grass roots level:

"This struggle against mental illness has been my major avocation in recent years, and indeed I suspect there have been times when I have been more concerned with it than the problems I face in handling labor relations and personnel problems for my fortunately understanding employer.

"I have served Mayview State Hospital as a volunteer for the past 12 years, have been a member of its Board since 1961 and chairman since 1963. I am a member of the Boards of the county and state mental health associations, and of the newly-appointed Allegheny County Mental Health Mental Retardation Board. I served the state as a regional chairman of the Comprehensive Planning Program for a 10-county area.

"These things are cited as background to emphasize one fact which has dominated all of the activities in which I have engaged: to do even a reasonably adequate job the supply of professional manpower just has to be expanded far beyond the present potential.

"There is no more frustrating problem for our Board at Mayview. Some of the members are well informed on the mental health field, others are relatively new. All are shocked at the paucity of manpower, and we keep writing letters to our Commissioner of Mental Health and our Governor and our legislators. The theme is always the same: 'We believe our hospital is doing a reasonably good job under present conditions of inadequate staffs and budgets. How much better a job these dedicated people could do if you gave them the tools!'

"As our County Mental Health Board begins its work of planning mental health centers, the enthusiasm of the members is certainly tempered by the knowledge that all of the fine plans in the world will collapse if we can't get the staff. And this won't be easy.

"I can't think of any more glaring example than Western State School and Hospital near Pittsburgh. It was built for 500 retarded children and 200 emotionally disturbed ones. It is the *only* facility in Western Pennsylvania which could accept deeply disturbed children. The beds for retarded children were filled quickly (the waiting list for them is another dismal chapter in our state), but Western has accepted only 30 or so disturbed children, some of them also retarded. Why? It has been unable to get staff.

"This could go on and on, but I'm sure I've made my point.

"That's why those of us in the hinterlands, facing these problems constantly, are indeed grateful that there are men in powerful positions in our government who do understand and support these measures which are so vitally needed to provide some day, somehow, the manpower necessary to give at least adequate care to the mentally ill.

"My earnest thanks to you for all that you are doing."

In the field of psychiatry alone every issue of "Psychiatric News," the official publication of the organization, is filled with hundreds of job listings, some of which have gone begging for a year or more.

In the field of psychology, the situation is even more critical. In a recent letter to Secretary Gardner, Dr. Arthur Brayfield, Executive Director of the American Psychological Association, estimated that the NIMH training support program in psychology would have to be increased at least five-fold to fill existing demands for services.

It is obvious from the foregoing that we cannot meet demands for mental health professionals in the traditional areas of work, much less provide the added manpower to staff the new community mental health centers, furnish psychiatric services under Medicare, supply mental health workers for Head Start, and so on.

We therefore recommend \$114,150,000 for the training programs of the National Institute of Mental Health during fiscal 1968. This is the exact sum recommended

in the five-year study ordered by this committee, and is only a modest beginning toward recruiting and training an additional 33,000 mental health workers in the next five years.

RESEARCH FELLOWSHIPS

The Administration recommends \$9,859,000 for research fellowships in the coming year, an increase of only \$726,000 over the present level of support. Under this restrictive budget proposal, we will be able to support ten *less* fellowships than we did last year.

We are constantly reminded of the shortage of research investigators in the field of mental health, and we are chastised for not coming up with basic solutions to such simple problems as schizophrenia and alcoholism. We cannot move forward unless we have a large cadre of research investigators.

We therefore recommend an additional \$2 million over the Administration budget for the research fellowship program of the NIMH.

DIRECT OPERATIONS

A year ago, I pointed out to this committee that the very restrictive Administration recommendations for the many intramural activities encompassed in this item seriously hampered the National Institute of Mental Health in its efforts to meet the fantastically increased requests for technical help from states and localities. For example, the initiation of the community mental health center program has resulted in staggering demands upon the under-staffed regional field offices of the NIMH. An individual application from a locality for a center frequently necessitates hundreds of hours of staff time in the initial development and subsequent revision of the proposal.

We therefore recommend an additional \$4 million for NIMH regional and field activities to provide increased technical assistance to states and localities and also to state hospitals requiring consultation in the development of patient care improvement programs.

As the Institute moves into a number of specialized mental health programs outlined in previous portions of this testimony, it obviously must have a larger number of planning and development personnel in the central office. The Administration recommendation for fiscal 1968 provides only two additional positions for this central planning, development and administration. We therefore recommend an additional \$2 million so that the Institute can provide effective technical leadership in the fields of alcoholism, drug addiction, suicide prevention, and so on.

On an over-all basis—in order to expand many other necessary activities in the central office—we recommend a total appropriation of \$61,764,000 for NIMH Direct Operations during fiscal 1968.

COMMUNITY MENTAL HEALTH

I am happy to report to this committee that enormous progress has been achieved in a very short span of time in launching the new era of community mental health centers.

As of March 27th of this year, 49 states, the District of Columbia and Puerto Rico have had state plans for the construction of community mental health centers approved. In the year and a half since the first grant was awarded in August, 1965, 173 centers have received construction aid, staffing aid or, in a few cases, both. Currently, 28 million persons either have community mental health services available to them, or have centers slated for construction and/or staffing in their communities.

It is estimated by the end of the current fiscal year—June 30, 1967—we will have supported 286 centers serving 47 million people.

The most heartening aspect of this program has been the vigorous participation by states, local governments and private organizations in supplying the bulk of the monies necessary to build these centers. At the present time, state, local and private funds are providing support within a range of two to three dollars for every federal dollar in the construction of these centers.

Those of us who were associated in one way or another with the pioneer 1963 Kennedy legislation take the greatest satisfaction in noting that community mental health center financing efforts have often grown from the deepest roots of the community—from the citizenry itself. Time does not permit the citing of

scores of examples of the most dramatic kinds of local initiative. For example, in Lane County, Oregon the citizens of 17 counties have worked together to raise the funds for a center which will serve residents in an area reaching from the Pacific Ocean to the summit of the Cascade Mountains.

In Daytona Beach, Florida the local mental health association initiated a campaign to raise money for the construction of a center; the largest corporation in the county contributed the services of its public relations department to promote the drive. Civic groups and hundreds of individuals participated—physicians, bankers, lawyers, housewives; one resident contributed the income from an orange grove to the project; the clergy sponsored a Mental Health Sabbath. Most important, the total effort brought all the interests within the county together for the first time in its history.

In your own state of Alabama, Mr. Chairman, the local officials of three independent counties and three municipalities have banded together to provide \$300,000 in matching monies for a center serving 200,000 people in the northwestern part of the state. At a special session concluded late in April, the Alabama legislature voted \$450,000 in state matching monies so that additional localities could open centers in the coming year. In the Mobile area, the good citizens have persuaded their city and county officials to allocate approximately \$250,000 which, matched by an equal amount in recently appropriated state funds, will guarantee a comprehensive center serving the southern portion of the state. Furthermore, additional projects with strong local backing are in the final planning stages in Birmingham, Gadsden and elsewhere in the state.

It is also important to realize that these centers are reaching the very people for whom the Kennedy legislation was principally designed—low income groups, people in rural areas, and other hard-to-reach segments of our population. For example, the Temple University Center in Philadelphia serves a predominantly low income area in the Northeast part of that city where more than one-fourth of the families are below the poverty level, and where there is a 60% rate of unemployment for youths between the ages of 15 to 21 who are not students.

Among the sparsely populated states, North Dakota has developed a program which seems miraculous to those of us who have been familiar for years with its one under-staffed state mental hospital at Jamestown. With a population of only 630,000, North Dakota has established three centers, and two others will probably be functioning within the next year. The three established centers have received only \$258,000 in federal money, as against state and local contributions of close to one million dollars. There was tremendous popular support behind the centers program in North Dakota. In 1965, the state passed a Community Mental Health Services Act which, for the first time in North Dakota's history, permits the counties to levy taxes to establish and support mental health and retardation services. In the short time since the passage of the act, the voters of five counties have approved an extra millage levy in special referenda.

Last year, several states adopted community mental health legislation. The National Institute of Mental Health describes the 1966 Pennsylvania Act as the "boldest approach to date." The Pennsylvania Act ensures that the localities of the Commonwealth will provide a wide range of mental health services; it provides for 13-member County Mental Health and Mental Retardation Boards composed of physicians, county commissioners, and citizen representation from voluntary health organizations in the field. The counties will operate the mental health centers, but the state will be responsible for up to 90 percent of any deficit incurred in serving citizens who are unable to pay. The state will pay the full deficit for inpatient care in a community mental health service up to 60 days, and partial hospitalization up to 120 days.

In addition, the state will also provide up to 20% of the total cost of the construction of the centers.

At the present time, twelve centers have been started in Pennsylvania; it is my understanding that the eventual goal planned by more than 3,000 citizens in 1963 and 1964 is the operation of a minimum of 78 centers.

Mr. Chairman, we will not build the additional 66 centers planned for Pennsylvania, or the hundreds upon hundreds of centers planned for other parts of the country, unless we increase the very inadequate sum provided in this Administration budget for the construction of centers. This committee was told in 1963 that our objective was the construction of 1,000 centers, reaching approximately half of our population, by 1972. In keeping with this objective, the Congress authorized \$65 million for the construction phase of the community

mental health center program during the third and final year of the present law. However, the Administration recommended only \$50 million last year and, as a consequence, we are falling behind in reaching the projected goal of 1,000 centers. For the coming year, the Administration recommends a similar restrictive ceiling of \$50 million in its request for renewal of the legislation.

We submit that this is not keeping faith with the people on this issue. As this committee knows, more than 30,000 citizens in every walk of life have been involved over the past two to three years in planning for these centers. They have not only planned, but they have *acted*—they have been the catalytic agents in bringing about state, local and private support for this program far in excess of the federal contribution. If the Administration recommendations continue to be significantly below the levels originally envisaged for this program, we will be faced with the unpleasant task of telling these dedicated citizens that they must wait many years for the realization of the dream of mental health centers in their respective communities.

We hoped for \$65 million for the construction of community mental health centers during fiscal 1968. This is a very modest proposal—it is the exact sum authorized by the Congress for this program in fiscal 1967.

STAFFING OF COMMUNITY MENTAL HEALTH CENTERS

Mr. Chairman, our most pressing and critical need right now is for additional funds for the staffing of community mental health centers.

The mental health center staffing bill (PL 89-105) received the *unanimous* support of both Houses of Congress in 1965. For the third year of the staffing program—fiscal 1968—the bill authorized \$30 million in *new* staffing grants. The Administration's *legislative* proposal for a three-year renewal of staffing grant authority, introduced as S. 1132 by the distinguished Chairman of the Committee on March 1st of this year, carried over this same \$30 million authorization for what amounts to the third year of our center staffing program.

Now comes the catch. In its *budget* request for new staffing grants for fiscal 1968 the Administration, for some inexplicable reason, asked for only \$20 million. Ignoring this strange budget request, the House Interstate Commerce Committee on April 20 unanimously voted the whole \$30 million in authorization for staffing.

On May 17th of this year the House of Representatives, by the uncomfortably close margin of 353 to 0, sustained the action of its legislative committee and thus implicitly and sharply questioned the adequacy of the Administration's request for mental health staffing.

If the Administration budget request is sustained, we will not be able to provide essential psychiatric services to several million people who need it right now. From the inception of this community mental health center legislation in 1963, we have insisted that the staffing portion of the legislation is more important than its construction phase. As the famed psychiatrist Karl Menninger put it, you can cure people in a barn with adequate psychiatric personnel, but you can cure no one in the most magnificent edifice if you lack that personnel.

Mr. Chairman, with your indulgence, I would like to quote from an observation on staffing which I made in an address to the 120th Annual Meeting of the American Psychiatric Association three years ago:

"Those of us who participated in the drafting of the Kennedy mental health legislation were careful to place the greatest emphasis upon limited federal support in the initial staffing of these centers. We envisioned these centers as primarily serving the low and middle income groups not now receiving adequate psychiatric care. We knew that patient fees could not support these centers, and we knew quite well that many of these people did not have health insurance.

"We expressed our hope to the Congress that the health insurance industry would some day broaden its coverage to include the ambulatory mental health center patient, but those of us who have been struggling for the past 15 years to persuade these same insurance carriers to cover the hospitalized mental patient for an adequate number of days, knew what a time-consuming battle we faced. In the interim, how could we ask the local community, or private organizations, to finance both the matching money for construction of these centers in addition to 100% of the operating costs from Day One, when the centers opened. *We therefore opted for brains over bricks.*

"As a consequence, the 1963 Kennedy Administration bill, guided by Lister Hill to a fantastic 72-1 victory in the Senate, provided two dollars in federal staffing aid for every dollar of construction money."

Mr. Chairman, we have a current backlog in staffing applications which would choke a horse. It is estimated that by June 30th of this year, we will be more than \$6 million short of having the necessary federal monies to match *approved* applications from local communities throughout the country. Furthermore, I want to stress this point—these are not paper applications. In every case, the local communities have had to submit a plan guaranteeing that local funds will not only be increased as the federal percentage declines from 75% in the first 15 months to 30% in the last year, but they have also had to include in this plan details as to how they will finance the centers *locally* when no more federal money is available.

It is well to remember that we are at the very beginning of the staffing program—the first staffing grant was awarded in March of last year. At the state and local level, the planning and tooling up process is not even completed. Furthermore, a majority of the 200 centers which will have received *construction* aid by June 30th of this year have not yet received comparable staffing monies, but in the coming fiscal year they will naturally request it in order to transform empty buildings into live treatment centers.

It was this committee which in 1962 voted the funds so that citizens all across the country could plan for the network of 2,000 community mental health centers which President Kennedy envisaged in his historic mental health message of 1963. This is no idle dream—30,000 citizens in all parts of this nation were involved in this planning process. Yet the Administration now says to these citizens: Forget your plans. Forget your dreams of a new day for the mentally ill when patients will be treated in the heart of the community, rather than shoved off to massive institutions far from their loved ones.

In light of these facts, I beseech this committee to vote the full \$30 million for new center staffing grants unanimously authorized by the Congress in 1965, and reaffirmed by the unanimous vote of the House Interstate Commerce Committee on April 20 of this year and the full House on May 17.

NIMH fiscal 1968 budget increases proposed by citizens

	1968 President's budget	Citizens budget
Research.....	\$76,477,000	\$89,477,000
Hospital improvement.....	10,610,000	16,610,000
Training.....	100,762,000	114,150,000
Research fellowships.....	9,859,000	11,839,000
Direct operations.....	50,764,000	61,764,000
Total.....	248,472,000	293,860,000
Total increase requested, citizens budget.....	45,388,000	
Community mental health services:		
Construction grants.....	50,000,000	65,000,000
Center staffing.....	46,168,000	56,112,950
Narcotic facilities.....	4,000,000	4,000,000
Total, community resources.....	100,168,000	125,112,950
Increase for community mental health services.....	24,994,950	

CALENDAR YEAR 1966 PROGRESS

Mr. GORMAN. I will make a few remarks concerning the matters before this subcommittee.

Progress in the fight against mental illness has been most heartening in the year since I last testified before this committee. In fact, I think there is general agreement among all of us in the mental health field that in 1966 more headway was achieved than in any year since the establishment of the National Institute of Mental Health in 1946.

Most significant was the recordbreaking drop of 24,000 patients resident in our State mental hospitals.

Senator HILL. You may get to it and I don't want to interrupt your talking, but how much of this do you ascribe to our local community mental health centers?

Mr. GORMAN. Senator, may I say this, sir. I think there are two or three happenings or events which have made this possible.

NATIONAL INSTITUTE OF MENTAL HEALTH TRAINING PROGRAMS

I think that the training programs of the National Institute of Mental Health, which have been supported largely by this committee and its sister committee in the House, made it possible for us to double the number of people working in these State mental hospitals.

That is No. 1.

INTRODUCTION OF NEW DRUGS

No. 2, the introduction of the various drugs of a tranquilizing and antidepressant nature and establishment of a psychopharmacology center was the second great development.

MENTAL HEALTH CENTERS

The third development I want Dr. Braceland to talk about, if he will, later on. We will begin to see a drop in admissions as soon as these centers are set up. We are still seeing the graph going up, because most of the centers have not been opened yet. I think in 2, 3, 5 years we are going to see a drop in that curve.

STATE HOSPITAL POPULATION REDUCTION

An interesting thing, Senator, is the fact that the admissions have doubled while the State mental population has gone down. People who would never send a loved one before to a State hospital do so now. They believe they can be helped and returned.

Eighty percent of them are returned within 6 months. In the days in 1945 when I toured the snakepits, you couldn't get anybody to send them to a State hospital unless the sheriff took them or they had a court order.

In the 11 years since the introduction of the drugs I just mentioned, Mr. Chairman, we have achieved an overall reduction in State mental hospitals of 106,000 patients. This is close to 20 percent below the 1955 patient population figure. It brings us within sight of the 50-percent reduction in State hospital populations by 1973, 6 years off, which President Kennedy envisaged in his historic 1963 mental health message to the Congress.

I think we are making tremendous progress in this field.

Mr. Chairman, I think it is important to recall that in the period prior to 1955, which you just inquired about, we were adding 13,000 patients a year to our already overcrowded State hospitals because we had no effective therapies to reverse this seemingly inevitable trend.

Senator HILL. It has been going up every year?

Mr. GORMAN. I was told it was inevitable. More people were going to come in and they were going to stay in until they died. That was the answer I was given.

If this pattern had continued, this trend, we would now have more than 700,000 patients in our State mental hospitals this year, as against the 452,000 who are now in residence. At a very conservative estimate,

and the chairman knows how conservative I am, this would have cost the States an additional \$2.5 billion in patient-care expenditures and \$4.5 billion for the construction of new hospital beds.

That's money we have saved the States which they can now spend on community mental health centers. We think this is a remarkable trend, and we are very happy with it. We are optimistic; we hope witnesses on the other institute have equal justification for optimism. We speak with some satisfaction and some pride and deep gratitude to this committee and to the Congress.

INVESTMENT RETURNS

Now, this is the era of benefit-cost ratios, cost-effectiveness and systems analysis, and young people working IBM machines. We are frequently reminded, in a tight budget year resulting from commitments abroad, that we must be prepared to justify every dollar which is requested. We are happy to do so.

The billions of dollars we have saved the States over this 11-year period exceed the total budgets of the National Institute of Mental Health over this same period by a ratio of more than 5 to 1. This is a pretty good return. In other words, for every dollar we have received in these mental health programs from the Congress over the years, we have returned more than \$5 in terms of hospital construction and operating savings and in the additional productivity of thousands upon thousands of our people, not to mention the happiness of people, of a father who is hospitalized, who is then returned to the family, to the children, to a job, instead of being in a back ward of a snakepit, being neglected.

This committee, and its sister committee in the House, have played a major role in these accomplishments, frequently going beyond inadequate administration budget recommendations. The very fact we have over \$100 million in this budget to train young people in psychology, social work, nursing, and so on, is a case in point. We don't have enough, but we move forward each year, and if it wasn't for that Federal training program which was started way back in 1948 when Dr. Braceland was a young man, we would be nowhere; we wouldn't be able to open any centers. If we had not started back in 1948 and had that leadtime, we would have been in a sorry state in projecting 2,000 mental health centers by 1980, as you well know, Mr. Chairman, because you introduced the legislation in 1962 and you had something to do with its passage in 1963.

Senator HILL. Why use that word "something?"

Mr. GORMAN. We are so conservative I thought we wanted to keep a very conservative record here today.

Let me revise that remark, Mr. Chairman—

Senator HILL. Go ahead, that's all right.

Mr. GORMAN. As a progenitor of some legislation with which you were intimately associated in 1963, we are now making the big move into community mental health. Aware of the fact that only one in five patients today is treated in a State mental hospital, the whole transition even surprised me until I look at the actual figures. We are in the early stages of building a network of mental health cen-

ters designed to provide early, easily accessible treatment to those of our citizens who require it, close to the family physician, to the minister, to the family, to the job; that is the whole rationale.

RESEARCH AND TRAINING REQUISITES

But we cannot achieve our objective without more research knowledge and a vastly increased reservoir of trained professional and non-professional workers.

PROPOSED BUDGET FOR NIMH

I am therefore proposing a carefully worked out budget of \$293,-860,000 for the National Institute of Mental Health during the coming year, an increase of approximately \$45 million over the very restrictive budget recommended by the administration.

I am not going to criticize the administration budget, as you know. I am just going to call it very restrictive; it is a stand pat, backward budget in every respect. You cannot move forward with this kind of a budget.

CENTERS PROGRAM

Now, Mr. Chairman, I am going to skip the basic testimony that I have outlined here, if I may, and just concentrate upon the centers program. Our desperate need right now is the centers program but I am happy to report that enormous progress has been achieved in a very short span of time in launching the new era of community mental health centers.

As of March 27 of this year 49 States, the District of Columbia, and Puerto Rico have had State plans for the construction of community mental health centers approved. In the year and a half since the first grant was awarded in August 1965, 173 centers have received construction aid, staffing aid or, in a few cases, both.

As in Alabama, as you know, it took them 2 years. The citizens participated in this thing; they have to decide what they want the centers to do, how much matching money they can raise. So it is no question—I understand that the 50th State, Montana, is now in so we have completed the planning phase and in the year and a half since the first grant was awarded in August 1965, that's quite an achievement, 28 million people reached since the first money in 1965. They have centers slated for construction and/or staffing in their communities.

It is estimated by the end of the current fiscal year, June 30, 1967, we will have supported 286 centers serving 47 million people. In other words, Mr. Chairman, we are doing what you told us to do.

STATE, LOCAL GOVERNMENT, AND PRIVATE ORGANIZATIONS PARTICIPATION

The most heartening aspect of this program, I want to emphasize this, has been the vigorous participation by States, local governments, and private organizations in supplying the bulk of the moneys necessary to build these centers.

At the present time State, local, and private funds are providing support within a range of \$2 to \$3 for every Federal dollar in the

construction of these centers. I think that is a remarkable record. In other words, expressing the citizen interest in this, not only in lip-service but in money.

Those of us who were associated in one way or another with the pioneer 1963 Kennedy legislation take the greatest satisfaction in noting that community mental health center financing efforts have often grown from the deepest roots of the community—from the citizenry itself. Time does not permit the citing of scores of examples of the most dramatic kinds of local initiative.

For example, in Lane County, Oreg., which is Dr. Matarazzo's home State, he has been reminded to talk about it—I remind you to talk about it again.

Senator HILL. Off the record.

(Discussion off the record.)

Senator HILL. On the record.

Mr. GORMAN. In Daytona Beach, Fla., the local mental health association initiated a campaign to raise money for the construction of a center. The largest corporation in the county contributed the services of its public relations department to promote the drive in Daytona Beach. Civic groups and hundreds of individuals participated—physicians, bankers, lawyers, housewives; one resident contributed the income from an orange grove to the project—and that's quite a bit to contribute. The clergy sponsored a mental health Sabbath. Most important, the total effort brought all the interests within the county together for the first time in its history.

In your own State of Alabama, Mr. Chairman—and I want to highlight this Alabama picture here. In your own State of Alabama the local officials of three independent counties and three municipalities have banded together to provide \$300,000 in matching moneys for a center serving 200,000 people in the northwestern part of the State.

I had the pleasure, Mr. Chairman, of being there on April 28 of this year. This is in a general hospital and actually it is remarkable that three separate county governments in the Tri-Cities area of Alabama combined with three separate municipal jurisdictions to put up this building. But the citizen support was so much behind it that I don't think the local municipalities had anything to do but put it up.

At a special session concluded late in April the the Alabama Legislature voted \$450,000 in State matching moneys so that additional localities could open centers in the coming year. That is the coming fiscal year.

In the Mobile area, the good citizens have persuaded their city and county officials to allocate approximately \$250,000—these are all sizable communities in which the amounts are great, which, matched by an equal amount in recently appropriated State funds, and that has been matched I understand since I wrote the testimony, by an equal amount in State funds which will guarantee a comprehensive center serving the southern portion of the State out of Mobile. Furthermore, additional projects—my data is 30 days old, and they are making great progress in this field. Now they are in the final planning stages in Birmingham, Gadsden, and elsewhere in the State.

PROGRAM BENEFICIARIES

It is also important to realize that these centers are reaching the very people for whom the Kennedy legislation was principally designed. This is an important point I want to get to and it is very close to my heart—low-income groups, people in rural areas and other hard-to-reach segments of our population.

For example, the Temple University Center in Philadelphia serves a predominantly low-income area in the northeast part of that city where more than one-fourth of the families are below the poverty level, and where there is a 60-percent rate of unemployment for youths between the ages of 15 to 21 who are not students. So this is serving people who really need help.

Among the sparsely populated States, North Dakota has developed a program which seems miraculous to those of us who have been familiar for years with its one understaffed State mental hospital at Jamestown. With a population of only 630,000—that includes the Indians, too—North Dakota has established three centers and two more are coming.

The three established centers have received only \$258,000 in Federal money, as against State and local contributions of close to \$1 million. That is really something. The citizens have obviously put out a lot in that one little State. I have been there three or four times; I know what that mental hospital was. God forbid that any of my relatives should go to the hospital in Jamestown, N. Dak.

In 1965, the State passed a Community Mental Health Services Act. They are moving along. Now I will skip a bit.

STAFFING OF CENTERS

But in order to do the job, the thing I want to come to—and it starts on page 18 and is the final point I make—is that the most pressing and critical need right now is for additional funds for the staffing of community mental health centers. That is the issue and that's where this budget falls down.

The mental health center staffing bill (Public Law 89-105) received the unanimous support of both Houses of Congress in 1965. It is my understanding from some familiarity with the process that the senior Senator from Alabama proposed the staffing proposals in 1963, but the other body declined to go along. The same senior Senator from Alabama reintroduced the same legislation in 1965, and in both the original and revised bills he had \$2 in staffing for every \$1 in building on the premise that personnel was the thing that did it—not buildings, but people.

For the third year of staffing, fiscal year 1968, which is the year we are talking about today, the bill authorizes \$30 million in new staffing grants. The administration's legislative proposal for a 3-year renewal of staffing grant authority was introduced as S. 1132 by the senior Senator from Alabama, and also introduced by Mr. Staggers of the House committee. We figured we were home free—we at least had \$30 million in the third year of the program.

BUDGET REQUEST INADEQUACY

Now comes the catch. In its budget request for new staffing grants for fiscal 1968 the administration, for some inexplicable reason, asked for only \$20 million. Ignoring this strange budget request, the House Interstate Commerce Committee on April 20 unanimously voted the whole \$30 million in authorization for staffing. They voted the full amount.

On May 17 of this year the House of Representatives, by the uncomfortably close margin of 353 to 0, sustained the action of its legislative committee and thus implicitly and sharply questioned the adequacy of the administration's request for mental health staffing.

If the administration budget is sustained, Mr. Chairman, we will not be able to provide essential psychiatric services to several million people who need it right now—not tomorrow, not next year, not 5 years from now. From the inception of this community mental health center legislation in 1963, we have insisted that the staffing portion of the legislation is more important than its construction phase. This was in the Hill bill of 1963; it was in the Hill bill of 1965. We have told the administration all about this. I will not comment upon the administration's receptivity; I will let that pass by.

As the famed Psychiatrist Karl Menninger put it, you can cure people in a barn with adequate psychiatric personnel, but you can cure no one in the most magnificent edifice if you lack the personnel.

APPLICATION BACKLOG

We have a current backlog, Mr. Chairman, in staffing applications which would choke a horse. It is estimated by June 30 of this year, just around the corner, we will be more than \$6 million short of having the necessary Federal moneys to match approved applications from local communities throughout the country. They have passed referendums, and the county commissions have voted the moneys. In other words, this is not academic, Mr. Chairman, this is for real and it is out of the hides of our good citizens.

Furthermore, I want to stress this point—these are not paper applications. In every case the local communities have had to submit a plan guaranteeing that local funds will not only be increased as the Federal percentage declines from 75 percent in the first 15 months to 30 percent in the last year, but they have also had to include in this plan details as to how they will finance the centers locally when no more Federal money is available.

These are the conditions we require of them before we even give them a grant and yet we have a backlog of more than \$6 million. It is well to remember that we are at the very beginning of our staffing program—the first staffing grant was awarded in March of last year.

At the State and local level, the planning and tooling-up process is not even completed. Furthermore, a majority of the 200 centers which will have received construction aid by June 30 of this year have not yet received comparable staffing moneys, but in the coming fiscal year they will naturally request it in order to transform empty buildings into live treatment centers.

It was this committee, I don't have to remind this chairman, which in 1962 voted the funds so that citizens all across the country could

plan for the network of 2,000 community mental health centers which President Kennedy envisaged in his historic mental health message of 1963. This is no idle dream—30,000 citizens in all parts of this Nation were involved in this planning process. Yet the administration now says to these citizens: Forget your plans. Forget your dreams of a new day for the mentally ill when patients will be treated in the heart of the community, rather than shoved off to massive institutions far from their loved ones.

BUDGET REQUEST INCREASE

In light of these facts, Mr. Chairman, I beseech this committee to vote the full \$30 million for new center staffing grants unanimously authorized by the Congress in 1965, and reaffirmed by the unanimous vote of the House Interstate Commerce Committee on April 20 of this year, and then reaffirmed again by the full House by unanimous vote on May 17 of this year.

That is my essential plea. I have appended to this statement, Mr. Chairman, the suggested budget of the citizen witnesses and with that, with your permission, I would turn the burden of testimony over to my distinguished friend and colleague, Dr. Francis Braceland.

Senator HILL. That is, of course, a very fine statement, Mr. Gorman.

Mr. GORMAN. I am happy to be here.

Senator HILL. Dr. Braceland.

STATEMENT OF DR. BRACELAND

PROPOSED BUDGET SUPPORT

Dr. BRACELAND. I appear as a representative of the American Psychiatric Association, the official body of American psychiatry, numbering now nearly 17,000 psychiatrists. I am here to express the support of that association for the citizens' budget for the National Institute of Mental Health, the budget detailed for you by my dedicated colleague and worker for the betterment of the condition of mentally sick people—Mr. Mike Gorman.

There is no need for me to recall to you the number of times I have appeared before this distinguished committee. I began appearing before this committee as a naval officer. I am a hardy perennial. I was Chief of Navy Psychiatry in World War II, fresh from firsthand knowledge of the havoc wrought by emotional and mental disorders in our Nation's youth detected as we mobilized for war, disorders which led to hundreds of thousands of rejections for military service and an equal number of psychiatric casualties abroad and on the homefront.

You may recall that so serious was this situation that at one time General Marshall complained that we were sending more men home with psychiatric diagnoses than we were sending abroad to fight the enemy.

KNOWLEDGE ADVANCEMENT

Each year as we come before this committee, we have hopes of bringing to you something melodramatic, but the makeup of man is much too complex for this. But, however, we have been advancing slowly and

advancing in our knowledge due largely to research and training which was funded by this committee and its counterpart in the House, both of which have consistently recognized our problems, even helped us by markedly increasing the administration's budget.

VIETNAM WAR PSYCHIATRIC CASUALTIES

Now, having mentioned the military, there is an interesting development there which is an outcome of what has been done in training and research; namely, at the present time in Vietnam there is a paucity of psychiatric casualties for the first time since World War I, really.

Now, neither the National Institute of Mental Health nor psychiatry is brash enough to claim credit for this, but the fact remains that due to changes, knowledge in the understanding and treatment of men, better selection, treating them up front and rapidly, we don't lose them. We keep them close to their colleagues and companions and buddies and they gain strength from them.

Incidentally there were two statements by generals from the Vietnam war which gave great credit to the young men over there as some of the finest soldiers it has been their pleasure to deal with in the past 26 years.

I mark that, if you please, sir, because I want to say later that we are having a great deal of trouble in mental hospitals with the admissions of the young people.

Now, as a psychiatrist and a clinician for 36 years I have lived mostly in the mental hospital milieu and I would like to address you on two aspects of the clinical problems. One is to note that I had the privilege of writing the mental health part of the Hoover Commission report and I said then, and I would like to repeat now, that were it not for the foresight of this committee and its counterpart in the House in furnishing NIMH with sufficient funds and the wisdom and skill of the NIMH officials in distributing them for training and research, the mental hospitals and psychiatric picture in this Nation would be in complete chaos.

This is not simply a figure of speech. I mean it, having seen it, having watched it, having been in it.

Senator HILL. Having lived with it.

Dr. BRACELAND. Yes, sir.

However, Mr. Chairman, we are appearing in a different psychiatric world than we were when we began 10 or 20 years ago and the progress and aid which we have made have been abetted by your assistance.

AMERICAN JOURNAL OF PSYCHIATRY ARTICLE

Mr. Chairman, in the American Journal of Psychiatry, which I have the honor of editing, Dr. Felix, whom you know well, wrote an article entitled "Community Mental Health, a Great and Significant Movement." I quote two short statements taken from Dr. Felix's commentary, for I know that you know he played an important part in our mental health advances. He said:

It is not a dream, but a reality. More progress has been made in psychiatry in the last 30 years than in all the span of recorded medical history before that time.

Now mental illnesses and their prevention have become in fact the community concern we have said for so long they should be. Mere words cannot express the great debt the American people owe, in fact, people everywhere owe to the late President Kennedy and the Congress of the United States for translating the findings and recommendations of the Joint Commission on Mental Illness and Health into law, thus making possible action at the community level.

PREPARED STATEMENT

I neglected to ask you, sir, if I may make this statement a part of the record.

Senator HILL. We will have it appear in full in the record, Doctor.

Dr. BRACELAND. Thank you.

(The statement follows:)

I am Francis J. Braceland and I have been a psychiatrist for nearly 36 years. I graduated from Jefferson Medical College in 1930 and was an intern and Chief Resident at Jefferson Hospital. I began my psychiatric fellowship training at the old Pennsylvania Hospital in Philadelphia in 1932. I was then a Rockefeller Fellow in Psychiatry in Zurich, Switzerland, and at the National Hospital, Queen Square, London. I returned to be Clinical Director at the Pennsylvania Hospital until 1941, when I was appointed Professor of Psychiatry and Dean of the School of Medicine, Loyola University.

I have since occupied the following positions:

1942-46—Special Assistant to the Surgeon General, U. S. Navy, and war-time Chief of the Psychiatric Section. I am a Rear Admiral, Medical Corps, USNR, Retired.

1946-51—Head of the Section of Psychiatry, Mayo Clinic, and Professor of Psychiatry, Graduate School, University of Minnesota.

1951-65—Psychiatrist-in-Chief, The Institute of Living, Hartford, Connecticut; since 1965 Senior Consultant in that institution; also Clinical Professor of Psychiatry, Yale University; since 1960, Lecturer on Psychiatry, Harvard Medical School.

I have been in the past:

President, American Board of Psychiatry and Neurology, 1953.

President, American Psychiatric Association, 1956-57.

President, Association for Research in Nervous and Mental Disease, 1957.

President, Board of Examiners for Certification of Mental Hospital Superintendents, 1955.

Chairman, American Medical Association, Section on Nervous and Mental Disease, 1956.

Chairman, National Health Forum, 1958.

Vice-President, World Psychiatric Association, 1961-66.

I am now Editor of *The American Journal of Psychiatry*, the official organ of American Psychiatry, and am a psychiatric consultant to the Surgeons General of the Army, Navy, and Public Health.

Mr. Chairman and Members of the Committee, I am appreciative of your willingness to hear me. I appear before you as a representative of the American Psychiatric Association; the official body of American psychiatry which numbers approximately 17,000 psychiatrists. I am here to express the support of that association for the citizens' budget for the National Institute of Mental Health, the budget detailed for you by my dedicated colleague and worker for the betterment of the condition of mentally sick people—Mr. Mike Gorman.

There is no need for me to recall to you the number of times I have appeared before this distinguished committee. I am a hardy perennial, having appeared first in a navy uniform as Chief of Navy Psychiatry in World War II, fresh from first-hand knowledge of the havoc wrought by emotional and mental disorders in our nation's youth detected as we mobilized for war. Disorders which led to hundreds of thousands of rejections for military service and an equal number of psychiatric casualties abroad and on the home front. You may recall that so serious was this situation that at one time General Marshall complained that we were sending more men home with psychiatric diagnoses than we were sending abroad to fight the enemy.

Each year as we come before this committee, we have hopes of bringing to you information regarding some remarkable breakthrough in our work which, like

polio vaccine, will solve many of our problems. But, the mental and emotional make-up of man is much too complex to allow for a simplistic advance such as this. Fortunately there has been, however, a slow steady advance in our knowledge due largely to the research and training funded by this committee and its counterpart in the House, both of which have consistently recognized our problems and many times have helped us even to the point of markedly increasing the budget recommended by the administration in so doing.

Though neither the NIMH nor psychiatry are brash enough to claim credit for it, there is at least one bit of good news out of the Vietnam conflict, namely, the reduction of losses from the military service due to psychiatric causes. A number of factors have combined to make this highly desirable situation possible. I shall not take your time to expand upon these factors but, certainly, psychiatric insight gleaned from two world wide holocausts contributed to this welcome turn of events. To be rejected by, or surveyed out of military service for psychiatric reasons, is a traumatic event which has deleterious effects which even reach into a man's life in his civilian capacity. This says nothing of the effect of the serious drain upon the nation's military manpower supply.

I have been a psychiatrist for 36 years, a clinician and a teacher who has lived mostly in the mental hospital milieu and it is my hope that I may address you on one or two clinical aspects of mental illness, for that is my only competence. Some of the things I say here today have been said before but they seem even more pertinent here and now. One of those is to note that I had privilege of writing the mental health portion of the Hoover Commission Report. I said then and want to repeat now that, were it not for the foresight of this committee and its counterpart in the House in furnishing the NIMH with sufficient funds and the wisdom and skill of the NIMH officials in distributing them for training and research, the mental hospital and psychiatric picture in this nation would be in chaos.

However, Mr. Chairman, we are appearing today in a different psychiatric world than the one in which we began our testimony 20 or even 10 years ago and I repeat that much of the progress which we have made over that period was aided, abetted, encouraged, and financed by your assistance. Apropos of this fact, the March 1966 issue of *The American Journal of Psychiatry*, which I have the honor to edit, had a special section of 10 papers on community psychiatry and an editorial by Dr. Robert H. Felix, which is entitled "Community Mental Health, A Great and Significant Movement." I quote two short statements taken from Dr. Felix's commentary, for I know that you know he played an important part in our mental health advances. He said:

(1) It is not a dream, but a reality. More progress has been made in psychiatry in the last 30 years than in all the span of recorded medical history before that time.

(2) Now mental illnesses and their prevention have become in fact the community concern we have said for so long they should be. Mere words cannot express the great debt the American people and, in fact, people everywhere owe to the late President Kennedy and the Congress of the United States for translating the findings and recommendations of the Joint Commission on Mental Illness and Health into law, thus making possible action at the community level.

When the martyred president expressed the hope that our state hospital population might be halved within a decade, I was one of those who did not believe it could be done, but, gentlemen, it is beginning to look like it might be done.

The Joint Commission he spoke about, you will remember, was made up of representatives of numerous and varied national organizations. You sponsored that group and it, after a careful study of the mental health situation in the nation—a study extending over five years—issued a report, the now famous Action for Mental Health, which has been called the magna carta of the mentally ill.

The figures Mr. Gorman has given you regarding mental hospital statistics are dramatic indeed; they are worthy of careful study. Prior to the new lease on life which the advent of new concepts and new drugs gave us in the middle of the last decade, we were in a fair way to have to continue to build new mental hospitals and continue to increase the size of those already extant. With the more than 700,000 patients in state hospitals that he mentioned, plus nearly an equally large number in private hospitals, general hospitals, and combined institutions, we would have been in serious trouble as the population continued to expand.

Instead, today these institutions house only half the number who might have been incarcerated, but that is still too many. With 452,000 individuals in these

institutions at present, some of them in places hardly conducive to recovery or rehabilitation, it is obvious that our work is far from being completed. Therefore, though I shall in the interest of time only touch upon certain aspects of the overall program, we in the profession heartily endorse the request in the citizens' budget that \$45 million be added to the administration's budget request, for a total of \$293,860,000.00, in order that good work already started may continue.

It is probable that in no year but this present one has the progress of the national mental health program been so specific, nor has there been an immediate future in which the decisions of the Congress will be more crucial in making possible a continuity of effort on the part of all concerned toward solving what has been called the nation's No. 1 health problem. The money which Congress has appropriated thus far, in addition to its prime purpose, also has acted as seed money and called forth appropriations by the various states far in excess of those provided by the federal government. An article in one of the journals published by the American Psychiatric Association notes the progress made by one state in meeting its problem. Undoubtedly, seed money for training and research spurred the initiation of this work and the resourcefulness of its citizens and community interest carried it to fruition. Since 1946 the resident state hospital population in Iowa has dropped 77% from more than 6,600 in that year to 1,683 in October 1966.

This notable change is due largely to Iowa's effort to get the patients out of large institutions, to decentralize and treat sick people in clinics, half-way houses, mental health centers and institutes. The active workers in the mental health field give a large number of people credit for this change—governors, state senators and representatives, U.S. congressmen, county supervisors, clerks, auditors, psychiatrists, family doctors, clergymen and others.

The citizens in all states are not quite so fortunate, however, and it will be a long time before some of them will be able to leave the grim fortresses which house them. Plans were made in 1963 to improve these institutions in all of the states and, hopefully, this year was to see a budget of \$36 million dollars to accomplish this. You have before you the administration's budget and know that the hopes for bettering the lot of these patients vanishes. It is our hope that an additional \$6 million dollars will be added to the administration's request in order to continue good work already begun and start in some hospitals which are badly in need.

For nearly two years now the grant support program in aid of both construction and staffing of community mental health centers has been in full operation. As a result, more than 120 centers' grants have been funded.

The year 1967 marks the turning point at which the concept of high quality care and treatment of sick people changes before our eyes from a hope to a reality for hundreds of thousands of our fellow citizens. When the plans were made originally, Congress authorized \$65 million dollars for construction of these centers for fiscal 1967 and fiscal 1968. It is a severe blow, therefore, to note that the \$15 million dollars cut from last year's budget is again recommended for this year. Thus, the national fervor which was worked up with the hope that people would receive treatment near their homes and loved ones, is to end in disappointment.

It is in these centers that various agencies, clergymen, family doctors and mental health personnel were to labor, and in them the blue collar worker was to receive treatment instead of being shipped off to a distant institution. We urge that the \$65 million dollars originally authorized by Congress for the construction of comprehensive community mental health programs be appropriated in the FY 1968 budget.

The proposal to extend the provisions of the Community Mental Health Centers Act certainly is a wise one. Dr. Yolles has announced that should Congress extend construction and staff aid for centers, community health centers will be available to about one-half the nation's population in the next five years. Grants have already been made to centers in 44 states and territories and Federal aid has encouraged communities to marshal their own resources. The new ways and new expanded mental health services are being brought to a variety of populations.

It was reported to Congress last year that the progress being made by the Institute in its continuing efforts to improve the mental health of the American people is, indeed, impressive. That progress must be accelerated in 1968, in my opinion, if we are to maintain our momentum.

Therefore, my initial request is urgent; it concerns manpower. There continues to be a critical shortage of trained manpower in the mental health fields. This has been said time and again; but we can now add something else to this statement. In the past two or three years, the potential of universities and other training facilities has grown to the point that knowledgeable men in this field believe that manpower *can* be trained in sufficient quality and quantity to meet the public demand for services—if sufficient funds in support of training are made available immediately.

All of us are acutely aware of both the manpower shortages in all the mental health professions and the unequal distribution of this manpower throughout the country. When I ponder the manpower problem today, I am reminded of a quotation from Abraham Lincoln. Lincoln said: "The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty and we must rise with the occasion. As our case is new, so we must think anew, and act anew."

While training programs in the core mental health disciplines are increasing in number and capacity, their total output continues to fall short of demand, even for the limited mental health facilities now in operation.

It is estimated, gentlemen, that by 1970 we will require at least 87,000 workers in the core professions of psychiatry, clinical psychology, psychiatric social work, and psychiatric nursing. About 22,000 of them will be needed to staff the community mental health centers we hope to see built by then. It is obvious that we will not be able to provide the mental health personnel we will need in the next decade—or even in the next two decades—unless we can greatly increase existing training programs for which NIMH is the major source of support. A lack of yearly increases in training appropriations for NIMH can seriously hamper the efforts to reach the projected manpower goal.

The President's budget, now before you, includes \$100.7 million for the training program of the NIMH. This is an increase over last year's training appropriation which totaled \$94.5 million. But it is still some \$8 million short of the \$15 million annual increase in training funds previously accepted by the Congress, at the outset of this program, as a minimum requirement to meet the projected goals of the nation's mental health program. In fact, due to increases in costs, the NIMH will be able to award even fewer training grants than in this present year.

That \$15 million annual increase is not a mythical figure, I submit. It was arrived at thoughtfully and accepted generally. But only in FY 1963 was it actually appropriated. I would sincerely hope, Mr. Chairman, that the FY 1968 budget could be increased by this amount and I would like to present to you some of the reasons why it is vital this year.

Translated into actual manpower, the loss of even ten million dollars means the loss of one year's training for about 1,425 people and produces a shortage almost impossible to make up. It also can have a profound effect upon the quality and stability of training centers which are forced to reconsider their goals if funds are not forthcoming at the national level.

The impact on persons needing treatment is greatest of all. According to recent calculations, a shortage of 1,000 professionals makes it impossible to provide direct clinical services to about 100,000 patients. A loss of 1,000 trainees for one year would mean that about 39 community mental health centers could not be staffed and that services would not be available to nearly four million people in areas the centers are designed to serve.

The health legislation of the recent past gives us an opportunity to establish new, experimental and special training programs to provide mental health services for the people. The profession of psychiatry is rapidly accepting and practicing the precepts of treatment within the community and treatment based on public health methods.

To work with psychiatrists, we must train more persons as allied health personnel, to meet new needs and to carry out new treatment methods. It is time, now, to introduce training programs of this type even in the junior colleges of our land and to support their initial efforts.

In today's complex world, mental health professionals must also have available opportunities to continue their education. For a number of years now, the Institute has established as a solid base for its Continuing Education Program, the means of providing postgraduate training in psychiatry for general medical practitioners and other medical specialists. All the other mental health professionals are now in need of similar programs and a Continuing Education Branch has recently been established within the Institute to support these

activities. Thus far 11,000 non-psychiatric physicians have received short term training in psychiatry.

Professionals and non-professionals alike can update their skills with this sort of federal support. Any public or private non-profit institution, including hospitals, community mental health centers, professional organizations, state and local agencies, and universities and colleges can request aid in establishing such programs. But the amount of aid to be forthcoming will depend explicitly on the amount of funds available. In 1968, I feel that funds for continuing education should have an exceedingly high priority.

Of course, the major portion of funds in support of training will be expended to continue expansion in the core professions of mental health.

But we now know that the number of professionals must be augmented by allied personnel. If the nation does not provide for this kind of team approach to mental illness and its proliferating problems of poverty and stress, funds expended to train professionals will not be spent to maximum effectiveness.

A survey done in 1963 indicated that almost 30 per cent of the psychiatrists and 16 per cent of the psychologists are providing services in more than one institution, moonlighting if you will, and the proportion of psychiatrists working in out-patient departments who have multiple jobs is 46.1 per cent for psychiatry, 23.8 per cent for psychology, 22.4 per cent for nursing. Unless additional core personnel to cover the psychiatric aspects of Medicare, community centers, psychiatric wards in general hospitals and psychiatrists for other burgeoning needs are provided, the mental health situation will be in a sorry state.

Due to the demands of the times, the once neglected medical discipline which I represent, has slowly come from behind hospital walls and spread its influence and attracted the interest and help of the community. It now makes contributions to its sister medical disciplines, to military medicine, to industrial medicine, to religious counseling and to education and these demands are bound to continue to increase as new services are demanded of this already overworked medical specialty.

As to psychiatry's growing importance in education, let me quote a few statistics for you. Federal figures indicate that in 1966 six million students were enrolled in our colleges and universities, 68% of them in publicly controlled institutions. It is to these students that the nation will look for its future leaders. Yet Farnsworth, Harvard's Director of Student Health, one of the most knowledgeable and experienced of college psychiatrists, points out that surveys indicate that for every 10,000 students, 1,000 will have emotional conflicts of sufficient severity to warrant some professional help. Three to four hundred will have depression severe enough to impair their efficiency, and of the five to twenty who will attempt suicide, one to three will succeed. Fifteen to twenty of these students will become ill enough to require treatment in mental hospitals. These statistics have serious connotations and one of the wisest and most understanding comments on the subject that I have heard was made by Harvard's Dean of Freshmen, Dr. F. S. von State, who said: "When so many capable youngsters are on the beach, it makes good sense to have expert lifeguards when some of them go beyond their depth."

This, gentlemen, is one of the important roles of the college psychiatrist and this is only one of the services performed by one group of men who are trained by means of government funds.

This committee, last year, communicated to the House its concern that mental health research efforts continue to expand. I concur in that concern and I sincerely hope that research funds will be appropriated for FY 1968 in an amount not only necessary but as generous as possible.

The light shed by research can be illusive and flickering. There are periods in which that light seems shadowed and uncertain. But mental health research is today providing some exciting and hopeful findings. It would be catastrophic to tell the research investigators to hold still, or at best to tread water. Service, training and research must proceed simultaneously, benefiting one from the other.

With your permission, I shall not go into detail regarding overall mental health research here but, rather, will comment upon that mental illness known as depression which has fascinated me since my advent into the profession.

I gave one of the scientific papers on depression in Madrid, that Mr. Gorman mentioned, and in fact was chairman of that section of the World Psychiatric Congress. Also I was a member of the NIMH Ad Hoc Committee appointed to investigate this illness and it is true that depression is one of the most painful and tragic diseases known to man. Strangely, too, it often seems to be an accompaniment of greatness. Many great men in world history and in our own nation's

history were depressed and some lost their lives during periods of depression. I am sure you can recall the sad histories of some of them.

Presently in our own nation approximately 20,000 deaths by suicide are reported annually, but that is only part of the story for there are many accidents which are well thought out and contrived and basically are suicidal acts. Most of these individuals are depressed; a number of them psychotically depressed.

Approximately 200,000 individuals in this country were treated last year for depression and there were equally as many depressed people treated under other diagnoses because of accompanying physical symptoms. The illness occurs in individuals of both sexes, all ages, all income levels and in all parts of the country. The predominating, and often all enveloping feeling in these patients, is one of despair, often so intense that it leads to suicide. Strangely, now it is the psychiatric diagnosis most often made and, strangely too, it often is found in men in middle life—good, conscientious, hard working individuals.

In earlier years, depression in middle life was thought to be exclusive property of the female; now it is known that it affects many men particularly those in their fifties in the so-called prime of life. In this period, there is a lessened ability to tolerate loss, frustration, or disappointment as one notes the beginnings of declining physical powers and personal resources.

It should be noted that even the man of achievement in middle life may also suffer severe depression. The statesman, the editor, the business executive, the professional man, all are prey to the onslaughts of this illness. You can recall instances well known to you I am sure, and you know that in these periods society loses worthwhile and capable individuals. Occasionally a man in this age group goes through a so-called "success" depression, a feeling of being pushed beyond his powers, a frightened look-down from a high position from which there is always a danger of falling. Severe depressions occurring in women at the time of middle life, when youth is fading, family leaving home, and husband preoccupied with work, have long been known and are well documented.

Finally, severe depressions often occur in the older age groups. Some of these people make suicidal attempts; some succeed. Often these illnesses appear to be due to senile change, but closer inspection reveals that they are due to depression and, if the illness is caught in time, it will respond to treatment.

The impact and urgency of this problem is better understood when one realizes that over the next five years in the range of one million people will be seriously affected by feelings of depression and despair, much more than the ordinary attack of hives, and that more than one hundred thousand Americans, most of whom are depressed, will take their lives in the same span of time.

The issue of suicide is even more distressing in that it is the fourth most frequent cause of death in the productive ages of 18 to 45. It is said to be the third but it is more likely the second cause of death in college students. Serious depression, unrecognized or untreated, has a high risk of suicide and in a real sense is a malignant disease that kills. Depression and suicide are inexorably linked together.

The toll of depression in our society, however, goes far beyond the malignant illness we have just mentioned. It is often an intermittent and recurrent disease; many individuals suffer from it and are unable to function, or function at a minimal level during the depressed period. Within a given year, 150,000 individuals are hospitalized for psychotic or psychoneurotic depressions in the United States. Another serious concomitant result of depression is the psychological impact of the illness on the family of the individual sufferer, particularly if the illness culminates in tragedy. The toll of depression in our society is further reflected in time lost from work and in students who drop out of high school or college. Some of the well known loss of interest and apathy in students, so frequently reported, is due to depression. There is also repeated evidence suggesting a close relationship of depression with other medical problems such as alcoholism and drug addiction.

I have no desire to dwell at length upon further clinical aspects of this or other illnesses, nor can I presume further on your time. The fact is that now, with careful planning, intelligent utilization of resources and recently developed methods and hypotheses, it is possible for the first time to launch an attack on this illness and to make inroads upon it and the quiet desperation and suffering that accompany it. Three bodies of data in the basic sciences, the areas of catecholamines, the electrolytes and steroid metabolism, have progressed to a point where they may be immediately applicable to the understanding of the biochemical abnormalities in depression. I would like to urge, therefore, that a special NIMH laboratory for the study of depression be created and that the

Ad Hoc Committee's recommendations regarding it be followed. They have already been presented to you.

This laboratory could be the center for the collection of all information extant upon this subject. It will have intra-mural and extra-mural components and will coordinate all research material upon the subject, in addition to training necessary personnel. I would strongly urge this committee to add \$4 million dollars to the present research budget in order that this important project may be gotten under way.

As an instance of the possibilities of advances in the immediate future, on Friday, March 31, 1967, the NIMH published a bulletin outlining a potentially effective drug treatment for manic-depressive psychoses. This drug is thought to control the recurrence of this devastating illness and a mechanism is now suggested as to the manner in which lithium salts may act in the treatment of mania, a problem which has plagued doctors and patients alike for more than a hundred years. Apparently it checks the intense manic excitement, and over-active patients are said to become calm under its influence. More importantly, it seems to act as a preventive of both manic and depressive attacks. Heretofore we have been able to treat and wait out individual attacks of this illness but we were never able to prevent recurrences, and patients and their families lived in dread of their reappearance.

The drug is lithium carbonate. *It is no miracle drug.* It requires expert care in its administration and in the handling of the patient. It needs much more research. It has promising possibilities; it is a prototype of the drugs which are in the offing which hold hope for greater relief of emotional disorders and for the possibility of treating patients without having to hospitalize them.

I shall say nothing about alcoholism, narcotic addiction, or drug abuse, they have been covered by Dr. Yolles and Mr. Gorman. I, too, urge that an additional \$13 million dollars over the administration's budget be added to finance research needs against these destroyers of men.

There are numerous other aspects of the program I would like to discuss with you, but it is not fair to take up your time. You have heard Dr. Yolles and Mr. Gorman and we all agree on the needs.

If I seem a bit enthusiastic or intense in my statements or efforts, I would ask your indulgence. Please remember that I have watched this situation for over 35 years and I have seen people neglected, humiliated and otherwise badly treated, and now with the present new enthusiasm and community interest, we may be pardoned for wanting their lot to improve. We live in dread that the clock will strike 12 and the royal coach which has carried our Cinderella of medicine to its present knowledgeable heights will turn into a pumpkin. I know that this committee will not allow that to happen.

In back of the various jokes about psychiatrists, mental hospitals and sick people, and beneath the cartoons in which couches and men with beards are prominent, there is still a certain amount of dread about these illnesses. In the present partnership of the professions, the government and aroused citizens, we are sure we can remove most of that. It is our sincere hope that we can do so soon.

Thank you, gentlemen, for allowing me to come before you.

NIMH fiscal 1968 budget increases proposed by citizens

	1968 President's budget	Citizens budget
Research.....	\$76,477,000	\$89,477,000
Hospital improvement.....	10,610,000	16,610,000
Training.....	100,762,000	114,150,000
Research fellowships.....	9,859,000	11,859,000
Direct operations.....	50,764,000	61,764,000
Total.....	248,472,000	293,860,000
Total increase requested, citizens budget.....	45,388,000	
Community mental health services:		
Construction grants.....	50,000,000	65,000,000
Center staffing.....	46,168,000	46,168,000
Narcotic facilities.....	4,000,000	4,000,000
Total, community resources.....	100,168,000	115,168,000
Increase for community mental health services.....	15,000,000	

EFFECT OF NEW DRUGS

Dr. BRACELAND. Today, instead of the number of people, the figures Mr. Gorman gave you are remarkable, prior to the new lease on life which we had about 5 or 6 years ago, and 10 years ago, the advent of the new drugs—we were in a fair way of having to continue to build new mental hospitals and expand their size.

Senator HILL. Getting bigger all the time.

Dr. BRACELAND. Yes, sir. With more than 700,000 patients that State hospitals at that time had, plus nearly an equally large number in private and general hospitals, we would have been in serious trouble.

Instead, today these institutions house only half the number which might have been incarcerated, but there are still too many, because there are 452,000 souls still in these places—some of them that are not particular conducive to rehabilitation, so that our work is not completed.

Therefore, in the interest of time I shall only touch upon certain aspects of the overall program.

BUDGET REQUEST INCREASE

We in the profession heartily endorse the request of the citizens' budget that \$45 million be added to the administration budget request, for a total of \$293,860,000, in order that now having gotten up this far, that we don't begin to let people down.

It is probable that in no year but this present has the progress of the national mental health program been so specific, nor has there been such an immediate future in which the decisions of the Congress will be more crucial in making possible a continuity of effort toward solving what is surely the Nation's No. 1 health problem.

STATE HOSPITAL POPULATION DECREASE

The money which Congress has appropriated thus far, in addition to its prime purpose, has, as my colleague suggested, been seed money. It has brought out funds from the various States. Since 1946, the resident State hospital population in Iowa has dropped 75 percent from more than 6,600 in that year to 1,683 in October 1966. This notable change was due to Iowa's effort to get the patients out of large institutions, to decentralize, get sick people into clinics, half-way houses, mental health centers and institutes.

And they give credit for this to the Congress, to their own Governor and representatives and county supervisors, family doctors and clergymen and all concerned.

Not everybody is quite so fortunate, however, and it will be a long time before some of the other States will catch up.

Senator HILL. Well, the local people must have done an awfully good job.

Dr. BRACELAND. They did indeed, sir. It was a unified experience, but it was sparked by the fact that the funds for the training and research had come through the help of your committee and your counterpart in the House.

It is our hope that an additional \$6 million will be added to the administration's request in order to help improve some of the present institutions.

MENTAL HEALTH CENTERS

You have before you the administration's budget and you know that in it the hope for bettering these institutions vanishes. I won't go over some of the things my colleague has gone over, but I certainly agree that the proposal to extend the provisions of the Community Mental Health Centers Act is a wise one.

It has been announced that should Congress extend construction and staff aid for these community mental health centers they will be available to one-half of the Nation's population in the next 5 years. Grants have already been made to centers in 44 States and territories and so on.

TRAINING

The progress we made before has to be accelerated if we are to maintain our momentum. Therefore, my initial request is urgent, it concerns manpower. There continues to be a crucial shortage of trained manpower in the mental health field. This is said time and again, but we can now add something else to that statement.

In the past 2 or 3 years the potential of universities and other training facilities has grown to the point where knowledgeable men in the field believe that manpower can be trained in sufficient quality and quantity to meet the public demand for service—if sufficient funds in support of training are made available immediately.

We are all, of course, aware of manpower shortages all over, but this seems to be especially pressing in our area.

Well now, while training programs in the core mental health disciplines are increasing in number and capacity, their total output continues to fall short of demand, even for the limited mental health facilities now in operation.

It is estimated, gentlemen, that by 1970 we will require at least 87,000 workers in the core professions of psychiatry and its counterparts. About 22,000 of them will be needed to staff the community mental health centers we hope to see built by then.

BUDGET REQUEST INADEQUACY

A lack of yearly increases in training appropriations for NIMH can seriously hamper the efforts to reach the projected goal. The President's budget now before you includes \$100.7 million for the training program. This is a slight increase, but it is still \$8 million short of the \$15 million annual increase previously accepted by Congress at the outset of the program.

Translated into actual manpower, Mr. Chairman, the loss of \$10 million means a loss of 1 year's training for about 1,425 people and produces a shortage impossible to make up and also will have a profound effect upon the quality and stability of training centers.

I would like to move on, if you please, to one or two things and then finish in the interest of time.

YOUNG PEOPLE IN MENTAL HOSPITALS

One concerns the large number of young people that we are dealing with in mental hospitals today.

In one private hospital I know 43 percent of the patients are under the age of 23—

Senator HILL. 43 percent?

Dr. BRACELAND. Yes, sir; and 100 are under the age of 20.

Now, these are youngsters who do not have the core mental diseases. Many of these are in there with personality and character disorders.

EMOTIONAL CONFLICTS OF COLLEGE STUDENTS

Farnsworth, the director of student health at Harvard and one of the most knowledgeable men in the field, points out that surveys indicate that for every 10,000 students in our colleges 1,000 will have emotional conflicts of sufficient severity to warrant some professional help, 300 to 400 will have depressions severe enough to impair their efficiency and five to 20 will attempt suicide and three will succeed.

Senator HILL. To what do you ascribe all of this?

Dr. BRACELAND. These are days of unrest. First of all, there is a pressure upon the young folks who are basically fine people, as the chairman of the freshmen up at Harvard said; with so many wonderful youngsters, capable youngsters on the beach, it makes good sense to have some expert lifeguards when some go beyond their depth. They have sort of lost their moorings and there is nothing to hold onto at the moment.

I believe this is a temporary thing which we are going through, it is not uncommon in times of war and following wars. You go back in history even to the Peloponnesian Wars, there were upsets always for a while after a nation was at war. This is one of the important roles in college psychiatry—

DISCIPLINE DECLINE

Senator HILL. How much of all this is due to the lack of discipline today? We don't have the discipline we had in the old days.

Dr. BRACELAND. We don't have it and it is very difficult to administer it. I was talking earlier to one of my colleagues and a man gave me an expression which I think is an excellent one. He said, "Men who have accomplished things today frequently deprive their children of that possibility by preventing them from going through some of the things that made them great."

That means that people say, "Well, he is not going to have to struggle the way I had to struggle to get through." But he forgets that it was that struggling that made him the person he is and the discipline that that entailed.

RESEARCH REQUISITE

This committee last year communicated to the House its concern that mental health research efforts continue to expand and I concur in that and sincerely hope that research funds will be appropriated.

DEPRESSION

I gave one of the papers, as a matter of fact, was chairman of a depression panel in Madrid, and I would like to talk to you for a few moments, because it is the diagnosis being made most frequently in this country at the present time. It is one of the most painful and tragic diseases known to man, because it has no obvious physical accompaniments, but strangely it is often an accompaniment of greatness and many great men in world history and our own have been depressed, and some have taken their lives as a result of depression.

There are 20,000 deaths by suicide now. It is probable there are two or three times that many, because coroners, members of the family are adept at disguising this, and understandably so, because it is such a traumatic event for families.

Most of these individuals are depressed, some psychotically depressed. Last year 300,000 people were treated for depression. There are equally as many depressed people who are treated under various other diagnoses, some little physical thing, but basically they are depressed.

This is at all economic levels and all groups. The predominant feeling is one of despair, often so intense that it leads to suicide.

In past years depression in middle life was thought to be the exclusive property of the ladies, but we know now that that isn't so. As a matter of fact, we are seeing it more regularly in the male and even in the successful man. He has what is called the success depression. In this period there is a lessened ability to tolerate loss, frustration, disappointment, and so on. Men of achievement get this.

I am sure we all recall instances of people who, having gotten up there, then get worried about where they are, out in front, and look down and feel it's pretty far to fall and get depressed.

OLDER AGE GROUPS

Another thing, finally, severe depressions often occur in older age groups. Some of the older people make suicidal attempts and some succeed.

While it is thought that these are due to senile change, that is not true always. Closer inspection reveals they are depressed and if they are caught in time, we will be able to relieve them because we are able to treat this illness.

And many of those people are depressed at the fact that the culture has very little place for them at the moment.

SUICIDES

The issue of suicide is most distressing; it is the fourth most frequent cause of death in the productive ages of 18 to 45. It's the second cause of death in college students.

Senator HILL. Second in college students today?

Dr. BRACELAND. Yes, sir; it comes after accidents. It is thought to be third, but basically it is second. So that the toll of depression in our society goes far beyond the illnesses that I have just mentioned to you, so often intermittent and recurring.

POTENTIAL DRUG TREATMENT OF MANIC DEPRESSIVE PSYCHOSIS

However, I have no desire to dwell on the clinical aspects of this because on the 31st of March of this year, NIMH published a bulletin outlining potential drug treatment for manic depressive psychosis, which is that group which is elated and then depressed and then which becomes circular.

Apparently the new drug, concerned with lithium salts, may act in the treatment of mania and this has plagued us for generations.

Now, it is no miracle drug, it requires expert care in administration, the handling of the patients, because it has some bad side effects if it is handled poorly.

Senator HILL. To wit?

Dr. BRACELAND. Well, difficulties with blood pressure, terrible physical symptoms which are upsetting, which can be gotten over if they are taken care of, and much of it depending on the type of person to whom it is given.

It has promising possibilities, it is a prototype of the drugs which are in the offing and which hold hope for further relief of emotional disorders.

BUDGET REQUEST INCREASE

I shall say nothing about many of the other clinical things. They have been discussed by Mr. Gorman and Dr. Yolles, but I urge that an additional \$13 million over the administration's budget be added to finance research needs against these destroyers of men.

Mr. Chairman, if I seem a bit enthusiastic in my statements or efforts, I ask your indulgence. I have watched this situation for over 35 years; I have seen people neglected, humiliated, and mistreated. Now with the enthusiasm and community interest, we may be pardoned for wanting our lot to continue; we dread the clock will strike 12 and the royal coach which has brought us thus far will turn into a pumpkin.

I know your committee will not let that happen. In back of the various jokes about psychiatrists and couches and mental hospitals and sick people there is still a certain amount of dread about these illnesses. We are striving to remove most of that. It is our sincere hope that we can do so soon.

I would like, too——

Senator HILL. You think with the necessary funds you can do so?

Dr. BRACELAND. I think that the funds will get us the people who will do it, Mr. Chairman.

As Mr. Gorman points out, we could have tents on the grounds if we had skillful people who were properly trained. We won't be able to get them all, because so many of them are character disorders which are deep within them, but we will be able to pick off some of these surrounding illnesses which have caused so much trouble to people and, of course, terrible distress to their families; sometimes with the core illnesses the parent is so sick that he doesn't get as much of a traumatic reaction, obviously, as does the family which takes care of him, which loves him.

ADDENDA ON CAREER RESEARCH GRANTS

I would like to add to my statement the budget which was described by Mr. Gorman and I would also like to put an addenda in with the hope that someday we can get back to career research grants when you see fit and when the time arrives properly, and add that to my statement.

Senator HILL. We will be glad to have that go in the record at this point.

(The addendum follows:)

I should like again to make particular mention and to emphasize the fact that the entire area of mental health manpower remains one of critical need. The shortage of trained personnel in all the mental health activities, research, services, teaching and administration, has been described many times in the past. I understand a special report on manpower needs for the next five years has been prepared by the National Institute of Mental Health at the request of both the House and the Senate Appropriation Committees.

Recognizing that support for increasing the manpower pool is needed across the board, I wish to comment particularly on the support for research personnel.

Research on the problems of mental illness and in the entire area of the behavioral sciences depends upon a strong and steady supply of competent scientists. The National Institute of Mental Health now supports research training in a variety of training programs. Every support mechanism that can produce these research personnel must be developed and extended.

As a psychiatrist, however, I am most concerned about the limited supply of research psychiatrists. One of the programs that has been of greatest benefit in producing research psychiatrists is the research career program of the National Institute of Mental Health.

Beginning in 1954, the National Institute of Mental Health awarded mental health career investigator grants to young physicians and behavioral scientists who would undertake to prepare for careers of research on problems of clinical psychiatry. Since 1960, when the NIH-wide research career program was announced, the provisions of this grant have been continued by the National Institute of Mental Health as one type of research career development award. In twenty of the medical school departments of psychiatry, research programs have been developed to which investigators who have been supported by the National Institute of Mental Health program are making essential contributions. Currently the program supports approximately 120 investigators by research career development awards, of which approximately 65 percent are employed in psychiatric centers.

The function of the current research career program, however, is too restricted for mental health research. Support by the career development award may not

be extended beyond ten years; and experienced, fully qualified research scientists are not eligible to apply. Extension of the period of support is needed to assure continuity in research for many of the investigators now at work in centers where research is focussed upon mental health problems.

Recognizing these needs, the National Advisory Mental Health Council recently endorsed enthusiastically two changes in policy in the mental health research career program: (1) Extension of eligibility for research career program awards to mature scholars; and (2) provision for the renewal of research career program awards beyond a ten-year period, by five-year renewals subject to competitive review.

I should like to add my support to that recommendation, and I hope the National Institute of Mental Health will move to implement these changes and thereby more effectively continue its effort to strengthen manpower in mental health research.

WITNESS PROFESSIONAL EDUCATION

Dr. BRACELAND. Thank you very much, Mr. Chairman, for hearing me. I am most appreciative.

Senator HILL. Where did you go to medical school?

Dr. BRACELAND. I went to Jefferson Medical School, where your father went.

Senator HILL. You voted to give me an honorary degree.

Dr. BRACELAND. I was there, I was among the group that was very glad to see it.

Senator HILL. I felt sure you were a Jefferson man, that's the reason I asked the question. You were not there in Samuel D. Gross' time?

Dr. BRACELAND. I was a few years ahead of Gross. He was in the 1800's.

Mr. GORMAN. He taught Dr. Gross psychiatry.

Senator HILL. Anything else you would like to add, Doctor?

Dr. BRACELAND. Not unless you have any questions.

Senator HILL. We deeply appreciate your remarks.

Mr. GORMAN. I would like to make a remark. This young man is a comer. In 1946 we testified together on the Mental Health Act. We have both been enormously successful, as you have, and it is a difficult thing to bear success as well as we have done without getting a "success" depression.

With that beautiful thought in mind—

Senator HILL. Do you think you are going to be able to survive?

Mr. GORMAN. Some days I don't know.

STATEMENT OF Dr. MATARAZZO

WITNESS PROFESSIONAL EDUCATION

Mr. GORMAN. The final witness I have, from the State of Oregon, is Dr. Joseph Matarazzo, who is professor of medical psychology, chairman of the department of medical psychology. He is the past president of the Oregon Mental Health Association. I have known him in that capacity rather than his professional one. He was trained under NIMH funds, which I hope he will mention.

Dr. MATARAZZO. I got my doctor of psychology at Northwestern University. I was trained under Federal funds and I think it is a fair statement to say, sir, that I am one of the first graduates of the 1946-47

NIMH Act, which really has sparked psychiatry and psychology work.

It is a pleasure for me to be here today on behalf of the National Association for Mental Health. I am a member of the board of directors of this association and I am also chairman this year of their program and priorities committee, and we have as our goals this year, two—manpower and community mental health centers.

The National Association for Mental Health is a voluntary, non-profit organization with 1 million members and associated volunteers in more than 800 affiliated divisions and chapters throughout the United States.

PREPARED STATEMENT

I would like to ask the chairman's permission to submit our prepared statement for the record.

Senator HILL. We will have it appear in full in the record, Doctor.

(The statement follows:)

My name is Joseph D. Matarazzo. I am a resident of Portland, Oregon, and I am Professor of Medical Psychology, and Chairman, Department of Medical Psychology of the University of Oregon Medical School in Portland.

I am appearing today in behalf of the National Association for Mental Health. I serve on the Board of Directors of the National Association for Mental Health and am Chairman of the Program Committee of that Association. I have been a citizen volunteer in mental health association work since 1950. At that time, while working at the Washington University School of Medicine in St. Louis under a fellowship, I was a Mental Health Association Bell Ringer (that is, a door-to-door campaign worker). More recently during 1962 and 1963, I served as President of the Oregon Mental Health Association, an affiliated Division of NAMH, and I also have been, and still serve, as a member of the Board of Directors of our Oregon Division. I greatly appreciate this opportunity of presenting our views before this Subcommittee.

The National Association for Mental Health is a volunteer, non-profit organization with one million members and associated volunteers in more than 800 affiliated Divisions and Chapters throughout the United States. We, the NAMH and its State and local Mental Health Associations speak in behalf of the more than one and one-half million patients in the hospitals, and for the uncounted other millions being treated as out-patients.

You will have heard from the professional societies representing the professional sector and from state and federal agencies representing the public sector. I speak for yet a third sector, the concerned, informed citizenry in towns and cities across the country.

Mr. Chairman, it is our hope that by appearing here today we can, in some measure, alleviate the misery and suffering of the 1 in 10 of us who at one time or another in our lives fall prey to mental illness. I do not have to describe to this Committee the magnitude of the mental health problem in this country. I would, however, like to submit for the record this fact sheet prepared by the National Association for Mental Health which more fully describes the problem.

For a number of years now representatives of the National Association for Mental Health have appeared annually before your Committee to testify in respect to the budget for the National Institute of Mental Health.

Again this year, as in years past, we urge that the Congress appropriate funds in sufficient amounts to enable that agency to carry on and expand its vital work.

Accordingly, we respectfully propose that the Congress appropriate for the Fiscal 1968 Budget of the National Institute of Mental Health the sum of \$423,038,000, an increase of \$74,398,000 over the President's budget of \$348,640,000.

General inadequacy of the President's budget

The President's proposed budget, exclusive of community mental health services, totals \$248,472,000, or \$21,000,000 over the \$227,000,000 budget for 1967. This

is approximately a 9% increase. In terms of the dimensions of the problem, and the government's declared commitment to a truly national program to combat that problem, a 9% increase is so modest as to be inadequate.

I do not wish to leave the impression that the National Association for Mental Health is not grateful to the President for recommending his proposed increase. We are deeply grateful for this. We are mindful of the grave problems confronting the President and the Congress. We are therefore grateful to this Committee and to the Congress for the steady increase in the yearly appropriations for the NIMH, which show that the Congress is indeed mindful of the importance of that agency's central role in the fight against mental illness. It is only because those increases have not kept pace with fast-moving developments and opportunities for service, particularly during the past three years, that we earnestly asks for the increases we propose.

When President Kennedy delivered his unprecedented message to the Congress in 1963, he not only called for a declaration of war against mental illness and mental retardation, but he also provided a set of carefully conceived and well documented battle plans designed to lead us to ultimate victory in that war.

I speak, of course, of the detailed, five-year budgetary projections which accompanied his memorable 1963 message.

Our hope for realizing the promise of President Kennedy's "bold new approach" were restored and bolstered when President Johnson, in his first statement to the Congress late in 1964, laid before Congress and the entire nation the goals of "launching an all-out attack on mental illness" in fulfillment of one of the American dreams to which the late President had dedicated himself.

However, according to any of the indices by which progress toward achieving that goal may be measured, we are falling behind because of failure to meet the long-term budgetary goals set by President Kennedy in 1963.

This is not to say that no progress has been made for we have indeed moved ahead—in numbers of psychiatrists trained; in numbers of psychologists, social workers, nurses and other allied professionals trained; in training of non-psychiatric physicians; in reducing the average annual number of patients in state mental hospitals and in other areas as well. This progress only reminds us of how much further along we might be today if President Kennedy's realistic, long-term budgetary goals had been met, and if the annual increases he projected had been provided. One can take little or no comfort in the knowledge that in some very important areas we have barely maintained the same level of funds appropriated in preceding years for that is the same as standing still. In the desperate fight against mental illness, to stand still is to slide backward.

Before its hearings are concluded, your Committee will have heard from many witnesses—officials, professionals and private citizens—and rather than burden the record with cumulative testimony, I shall confine myself to the following budget items which the National Association for Mental Health deems of the utmost importance.

Research

In the President's budget only \$76,477,000 is allocated for research. This is less than one third of the total operating budget (excluding community mental health services) of \$248,472,000 and less than 20% of the overall budget of \$348,932,000.

Mr. Chairman, we believe that this dollar proportion to the total hardly seems appropriate or adequate for an attack on a set of problems for which we acknowledge we have so few answers. While we have learned a great deal in recent years about better ways of treating the mentally ill, the fact remains that there still are wide gaps in our knowledge which can only be filled by research. We still need basic research in brain function and behavior which cannot be advanced with the inadequate appropriations provided in the President's budget. For example, there is a critical need for basic research in how humans can most effectively function in society as individuals and as members of social groups, and in other such specialized areas.

Moreover, while there is a token increase of 6.8% for research in the proposed President's budget for Fiscal 1968 from \$71,631,000 in 1967 to \$76,477,000 in 1968, the General Research Support Program is to be cut by 12% from \$6,434,000 in 1967 to \$5,667,000 in 1968. General Research Support, the most innovative concept in research financing in a long time, has proven to be the most valuable type of research support which medical schools and other research institutions can have.

It is used entirely for research and for imaginative pilot studies and gives fluidity to the research operation not possible with more rigid project grants.

We request that the amount for General Research Support be increased from \$5,667,000 to \$7,720,000 representing an increase of 20% over the 1967 budgeted amount of \$6,434,000, or an increase of \$2,053,000 over the \$5,667,000 called for in the President's 1968 budget.

We recommend that the balance of the proposed item for research, \$70,810,000 be increased to \$82,847,000 in order that other research programs carried on by the National Institute of Mental Health may be supported at an adequate level.

In summary, we are requesting that the total research budget for Fiscal 1968 be increased to \$90,567,000 or an increase of \$13,757,000 over the figure of \$76,477,000 in the 1968 President's budget.

Training

In no other aspect of the total NIMH program is it more important to provide the fullest possible measure of financial support than in the critical area of training to meet current and anticipated manpower needs.

Here, especially, are we reminded by the progress already made with limited funds of where we might be today if we had provided support at the five-year levels projected by President Kennedy in 1963. Only in 1964 was the Kennedy projection achieved. The appropriation for 1965 was \$10,000,000 below and in 1966 it was \$14,000,000 below President Kennedy's projections. The budget for Fiscal 1967 provided a total of \$92,266,000 for training, against the Kennedy projection of \$114,000,000 or \$21,734,000 less.

While we cannot make up for the loss of the \$45,734,000 in Fiscal 1965, 1966 and 1967, we surely cannot afford to aggravate a critical and serious situation by continuing to under-finance this vitally important program.

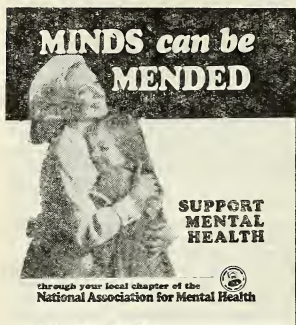
The National Association for Mental Health, therefore, urges that there be appropriated the sum of \$116,500,000 for training, an increase of \$15,738,000 over the amount provided in the President's budget. This would still be far below the realistic projection for Fiscal 1968.

An item-by-item breakdown of our Budget proposals is appended to this statement. This shows the various activities, including those discussed above, for which the National Association for Mental Health proposes increases over the President's budget. In singling out the items above, I do not intend to convey the impression that we are less serious about the need for the other increases we propose. Rather, I do not wish to burden the record with cumulative testimony. I am confident, having heard Mike Gorman's eloquent and detailed presentation, that your Committee has heard the best possible comprehensive statement of the case for our proposed budget increases.

Mr. Chairman, and Members of the Committee, it is a privilege for me to have had this opportunity to present this statement in behalf of the National Association for Mental Health, and I thank you.

Proposed increases, NIMH budget, fiscal 1968

	1968 President's budget	Citizens budget, (national association for mental health)
Research.....	\$76,477,000	\$90,567,000
Hospital improvement.....	10,610,000	16,610,000
Training.....	100,762,000	116,500,000
Research fellowships.....	9,859,000	12,429,000
Direct operations.....	50,764,000	61,764,000
Total.....	248,472,000	297,870,000
Community mental health services:		
Construction grants.....	50,000,000	65,000,000
Center staffing.....	46,168,000	56,168,000
Narcotic facilities.....	4,000,000	4,000,000
Total, community resources.....	100,168,000	125,168,000



1967 FACT SHEET

Facts about mental illness

Those concerned with the problem of mental illness are encouraged by recent enactment of a Federal support program to help states and communities establish mental health centers serving the local population.

However, the existing Federal program, at the time of its expiration, will have provided funds for mental health centers serving at best only one-third of the people.

Citizen support will be essential if the existing program is to be effectively developed and expanded to provide community services to the remaining two-thirds of the American public.

The extent of mental illness

At least 1 person in every 10—19,000,000 in all—has some form of mental or emotional illness (from mild to severe) that needs psychiatric treatment.

There are more people in hospitals with mental illness, at any one time, than with all other diseases combined, including cancer, heart disease, tuberculosis and every other killing and crippling disease.

Mental illness is recognized by doctors to be an important factor in many physical illnesses, even heart disease and tuberculosis. At least 50% of all the millions of medical and surgical cases treated by private doctors and hospitals have a mental illness complication.

How many enter and leave mental hospitals?

The latest figures show that over 1,500,000 persons are on the books of public and private mental hospitals, psychiatric services of general hospitals, and Veterans Administration psychiatric facilities. (This includes patients in hospitals at the beginning of the year, plus those admitted during the year.)

On any one day of the year about 760,000 persons are under the psychiatric care of these hospitals, including about 150,000 who are not actually in the hospital but are on "trial visit" or a similar form of supervision.

Currently about 800,000 persons are admitted during the year to public and private mental hospitals and the psychiatric services of general hospitals. Of these, nearly 300,000 have already been hospitalized one or more times.

What are chances of leaving a mental hospital?

With good care and treatment, at least 7 out of 10 patients admitted to a mental hospital can leave partially or totally recovered.

Data from a number of states show that about 75% of those admitted for the first time leave the hospital within the first year.

In the case of the most prevalent mental crippler, schizophrenia, the chances of release within a year for newly admitted patients have jumped from about 20% to about 80% in the last 40 years. The higher rate occurs, however, only when proper treatment is promptly administered.

In the case of two other serious mental illnesses, involutional psychosis and manic depressive psychosis, the chances of recovery or improvement are about 65% and 75%, respectively.

In the past, readmission rates have been as high as 35% of the patients discharged within a year. Recent research has shown that this figure can be reduced to about 10% with continuing and thorough rehabilitation service, including medical, social and vocational after-care.

Mental illness among children and young adults

Mental illness occurs at all ages, including childhood. It is estimated that there are more than half a million mentally ill children in the United States classified as psychotic or borderline cases. Most of these children are suffering from the psychiatric disorder known as childhood schizophrenia.

Only a very small percentage of the total are receiving any kind of psychiatric treatment.

The latest annual figures show that 24,438 children and young adults were admitted to public mental hospitals for the first hospitalization for serious mental disorder. Of these, 3,247 were under 15, and 21,191 were between 15 and 24.

On any given day in that year there were 27,686 children and young adults with serious mental disorders in our public mental hospitals. Of these, 4,547 were under 15 and 23,139 were between 15 and 24.

In private mental hospitals, first admissions of children and young adults totaled 4,636, of which 243 were children under 12 and 4,393 were between 12 and 21 years of age.

Conservatively estimated, an additional 300,000 children under 18 are served in psychiatric clinics each year, for less severe mental disorders.

During a one-week period, psychiatrists in private practice saw about 49,600 children (under 12) and adolescents (12-17 years). This figure represents about 24% of all patients (207,400) seen by psychiatrists in private practice.

Clinic facilities in the community

Last year there were about 2,000 public and private out-patient clinics in the United States. Many of these are part-time, and most of them have long waiting lists.

An estimated one million children and adults are served in these clinics.

Almost half of these clinics are in the northeastern states, principally in urban areas.

The best-informed mental health professionals estimate that a full-time clinic is needed for every 50,000 people. This would mean 3,880, or twice as many as now exist.

Mental hospital facilities

There are 497 mental hospitals in the United States. They include 244 state hospitals, 45 county hospitals, 41 Veterans Administration neuropsychiatric hospitals, two other Federal hospitals, and 165 private psychiatric hospitals.

Approximately 495 community general hospitals, or about 1 out of every 11, have separate units for treating psychiatric patients. About the same number more admit psychiatric patients to their regular medical facilities.

Care and treatment of mental hospital patients

The great majority of patients in state mental hospitals receive only custodial care. Only a small percentage receive intensive psychiatric treatment, even though research has demonstrated that some patients who have been in the hospital as long as 5, 10 or 20 years do recover when they receive intensive treatment. The reason for this situation is that few state hospital systems have the necessary

funds to provide adequate staff and equipment for intensive treatment. A key index of this inadequacy is the amount which the hospital spends per day for the maintenance of each patient. (Maintenance covers the salary of all personnel, treatment supplies, plus equipment, food, clothing, and overhead.) Latest figures show that the average daily expenditure for maintenance in public mental hospitals is \$6.74 per patient. One state spends as little as \$3.18. By contrast, short-term general hospitals spend more than \$44 per patient per day, private psychiatric hospitals, \$33, and VA psychiatric services, more than \$16 per patient per day.

**Psychiatrists:
their number
and distribution**

In 1965 the number of practicing psychiatrists totaled about 14,650, providing approximately 721,000 man-hours of work activity per week. However, only 60% of work activity was devoted to direct services to patients, with the remaining time spent in consultation, teaching, administration, and research.

In a recent comprehensive government survey of psychiatrists, in which 88% reported information about themselves, only 9% reported that their major specialty is child psychiatry.

More than half of the nation's psychiatrists are located in five states: 21% in New York, 13% in California, 6% each in Pennsylvania and Massachusetts, and 5% in Illinois; 13% reside in areas which represent 35% of the population. One state has as few as 11 psychiatrists.

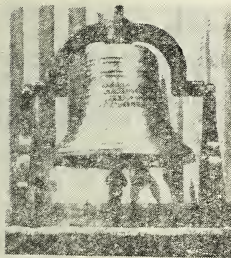
**Cost of
mental illness**

About 2 billion dollars is spent annually for the treatment of mental illness in state, county, Federal and private mental hospitals and in psychiatric units of community general hospitals.

Annual expenditures for community mental health programs (including out-patient clinics) total \$112,122,419.

**Cost of mental
illness to
industry**

Business authorities conservatively estimate that the annual loss to industry directly related to emotional disorders is staggering, amounting to many billions of dollars each year.



Issued by:

The National Association for Mental Health
10 Columbus Circle, New York, N. Y., 10019



**The mental health bell — symbol
of the fight against mental illness**

PROPOSED BUDGET SUPPORT

Dr. MATARAZZO. I would like to add my comments both in support of Dr. Gorman and Dr. Braceland. We support them wholeheartedly, and I will not take the time of the committee to go over the same points.

There are just five short points we would like to stress and I would like to get to those immediately.

TRAINING AND RESEARCH PROGRAMS

First, in my capacity as a professor in a medical school and as department head, I have come in contact with the training and research programs that the President and the NIMH and Congress have spawned, and I would like to ask you to consider very carefully several of the items that have been cut this year or have not been added to in any sufficient detail.

RESEARCH GRANT DEARTH

One of these has to do with the fact that the careful study of the President's budget will reveal an addition of only 14 new research grants for the country as a whole.

Senator HILL. For the whole country?

Dr. MATARAZZO. Mr. Chairman, I come from a small State, as Mr. Gorman just said. We have 14 psychologists in my department alone that need those 14 grants—in just my small State. I travel up and down the country lecturing in the colleges and I have found a depression a bit different from the successful depression.

UNFUNDED YOUNG SCIENTISTS

I find among our young scientists in the mental health field, and in the other health fields I might add, a kind of beginning depression, the depression of the beginning man who now finds funds are being diverted elsewhere and as he is about to begin his health and science career, is unable to get some of the funds for this.

We strongly urge that more money be put in for research. Fourteen new research projects are inadequate.

GENERAL RESEARCH SUPPORT GRANTS

In addition, in its wisdom several years ago you passed some new legislation permitting general research support grants. These have been extremely useful to heads of medical schools and research institutions, because they provide a fluid support for research for young men and women at the beginning of their research careers and also for people who are established in their research careers when new leads are revealed.

The current President's budget for fiscal 1968 has a 12-percent decrease in this very important item. We would like to see that particular item increased rather than decreased.

COMMUNITY MENTAL HEALTH CENTER STAFFING

In addition, Mr. Chairman, there are several other points.

First, the staffing of the community mental health centers. We strongly urge that the points made by Mr. Gorman and Dr. Brace-land be heeded. We ask for an additional \$10 million for these community mental health centers.

As Dr. Menninger said, you certainly have to have staff. It is extremely important, and staff could really be able to carry out their responsibilities even if we didn't have a beautiful edifice. We now have the edifices and, as was pointed out by my colleague, many of the States and the citizens have really come together for these centers in their participation. We must have the staff to man them.

Along with the current staff that we want, which will take from the staff that are already available, we have got to have the joint and the related project of training new people, and here are the final two points we would like to make.

CAREER DEVELOPMENT AWARDS

One has to do with the career development awards. If you study on page 25 of the NIMH budget, you will find that there is an increase of only five career development awards for the country as a whole.

Sir, we have just applied for three of those from my department alone. Again, I underscore the fact that we come from a small State. There are scientists from all over the country, well qualified, and we must have more career development awards than those.

TRAINING GRANTS

Finally, of course, the training grants show a decrease of \$2,182,000 for new training grants for fiscal 1968 relative to fiscal 1967. It would be impossible for us to take advantage of our community mental health centers and the staffing of these which we have to do unless we increase the supply of people to keep up with the population increases, let alone the new and exciting developments in the field of mental health.

Mr. Chairman, I urge very strongly that the citizens' budget be adopted and that we add substantially to the President's budget for fiscal 1968. If we must make cuts, and, obviously, there are times during international crises when we must—I would hope that the staffing portion not be cut. I would hope that the career development and research awards and training grants not be cut.

These are absolutely essential if we are to maintain the lifeline.

Thank you, sir.

WITNESS SPEAKING ENGAGEMENTS

Senator HILL. You brought us another good statement, Doctor.

Doctor, you spoke about going around speaking quite a bit; did you not?

Dr. MATARAZZO. Yes, sir.

Senator HILL. To whom do you speak mostly?

Dr. MATARAZZO. I speak to citizens groups up and down the State of Oregon and in other parts of the West and I also speak to universities.

Senator HILL. I think it is so important to carry this message to the people, to the citizens. I think that is one where we have failed to do what we should have done.

You take the average person, if you met him on the street in many places and asked him something about NIMH, he wouldn't know what you were talking about.

Dr. MATARAZZO. But, sir, in the State of Oregon, as in all of the other States, as you heard in the earlier testimony, we currently have half the number of patients in our State hospitals that we had in 1955.

Senator HILL. You do?

Dr. MATARAZZO. Only half, and when I travel up and down our State, giving talks to our local mental health associations and meet the mothers, fathers, brothers, and sisters of these people, they can tell you they have seen the effects of the congressional appropriations in our own local communities.

Senator HILL. I think it is fine. I certainly would strongly commend you for taking time out of what, I am sure, is your very busy and demanding life to tell this story.

DAWN OF HOPE

Dr. MATARAZZO. As I say, I was trained under legislation which you introduced; when I was trained we were told there was no hope for either mental illness or retardation.

In my lectures I talk only about hope, sir, and that has happened in 15 years.

Senator HILL. I think it is fine that you go out and carry this message.

Most commendable, sir.

Mr. GORMAN. Mr. Chairman, Dr. Braceland, if I may say so, to my mind, along with Dr. Matarazzo, is a brilliant communicator. He has spoken over the country for the last 15 or 20 years. In his small community of Hartford, the Hartford Courant paper there, I think, has printed his talks for 11 years, which is unprecedented to me. I might say to the fellows in the cardiovascular field, if they would emulate our example in communication, they might do much better in obtaining funds.

Of course, we are not doing very well, sir.

Senator HILL. I know Dr. Braceland has been a dedicated man. He has been before our committee many times. It is always an honor to have you here, Doctor. And I know how you have sought to carry this message, but the problem is there are too few Bracelands to carry this message.

Mr. GORMAN. As I said, there are just a few of us who are great evangelists and what else can you do? When you have reached the top, where can you go? But Dr. de Bakey is trying to arrive, and I want to bring him on.

Senator HILL. Thank you very much for your fine statements.

HEART PROGRAMS

STATEMENTS OF DR. MICHAEL E. de BAKEY, CHAIRMAN, DEPARTMENT OF SURGERY, BAYLOR UNIVERSITY MEDICAL SCHOOL; DR. LOUIS R. KRASNO, ASSISTANT CLINICAL PROFESSOR OF MEDICINE, STANFORD UNIVERSITY MEDICAL SCHOOL; DR. JOHN M. WEINER, RESEARCH ASSOCIATION IN MEDICINE, UNIVERSITY OF SOUTHERN CALIFORNIA MEDICAL SCHOOL; DR. JOSEPH A. WILBER, CHRONIC DISEASE CONTROL SECTION, GEORGIA DEPARTMENT OF PUBLIC HEALTH; AND DR. T. JOSEPH REEVES, PROFESSOR OF MEDICINE AND DIRECTOR OF THE CARDIOVASCULAR RESEARCH AND TRAINING PROGRAM, UNIVERSITY OF ALABAMA

INTRODUCTION OF COLLEAGUES

Senator HILL. Dr. de Bakey.

Dr. DE BAKEY. We are glad to have the opportunity to be here, sir. May I ask my colleagues to join me here and introduce them?

Dr. Reeves, who is professor of medicine at the University of Alabama; Dr. Louis Krasno, who is assistant professor of medicine at Stanford Medical School; Dr. John Weiner, research association in medicine, University of Southern California Medical School; and Dr. Joseph A. Wilber, chronic disease control section, Georgia Department of Public Health.

Senator Hill, I want on behalf of my colleagues here and myself to express our grateful appreciation for the opportunity of testifying before this committee again and to particularly testify on behalf of the National Heart Institute.

Off the record, if I may say so.

(Discussion off the record.)

LEADING CAUSE OF DEATH

Dr. DEBAKEY. It is, of course, unnecessary, Mr. Chairman, to point out to you and your committee, who is so well aware of these problems, the enormous aspects of heart disease in this country and the continuing position as the leading cause of death—54 percent of the deaths in 1965 were caused by heart disease.

NATIONAL ECONOMIC BURDEN

And it is also, I think, unnecessary to point out the fact that this problem constitutes one of the most important economic burdens of the country.

One of our previous—one of your previous witnesses pointed out that he was a conservative and gave you conservative figures. Well, I can say also, Mr. Chairman, that I feel conservative about the figures that I am speaking of here. It has been estimated that the economic burden of the country of heart disease is in the approximate figure of \$25 billion a year to this country. I think it is a conservative figure.

Now, aside from the economic burden, the grief that comes to almost every family in this country at some point from heart disease is common—the suffering that occurs from this condition is, I think, far more important than the economic aspects, but since we are talking about economy and must face it realistically, I think it is important to point out that this is a very important aspect of the problem.

UNIVERSAL-AGE DISEASE

Now, this problem, Mr. Chairman, is not, as has been commonly believed, a problem of the old-age people—it is also a big problem of the younger people and, in fact, one-third of these—at least one-third of the deaths in this group are in the people under 65 years of age.

RESEARCH PROGRESS

Those of us who are constantly seeing patients with this problem are aware of its importance in terms of both this aspect and in terms of the grief and suffering. But I think we can say, Mr. Chairman, that as a direct result of the activities of yourself and your committee, and Congress as a whole, in supporting research in this area over the past few decades, and particularly over the past decades we have made some progress in this area and can report, I think, some encouraging progress.

Senator HILL. There is no question about that. I sometimes think you have made more progress in this area than perhaps any other area.

I see Mr. Gorman shakes his head, no.

Dr. DE BAKEY. Well, we have made good progress, I think, particularly in the past decades when the fruits of the research activities that have been supported in the previous decade began to appear.

HYPERTENSIVE HEART DISEASE

In fact, the overall death rate from heart disease over the past decade has decreased. Unfortunately, this decrease is not in all the areas of heart disease, but, for example, the death rates have declined in hypertension and hypertensive forms of heart disease by 45 percent. This is a very striking decline. This has come from research in the use of drugs particularly and antihypertensive medication.

RHEUMATIC HEART DISEASE

Another area in which tremendous progress, I think, is made in terms of death rate decrease is in the field of rheumatic heart disease—33 percent down in 10 years. And if we were able to put the full support of our knowledge in this area—research knowledge in this area, we could virtually eliminate rheumatic heart disease, but this takes funds and it takes manpower.

STROKE

Another area, stroke, which for a long time was a condition that was considered virtually hopeless in which there was little or no progress—in fact, until about 10 years ago little or no progress in the whole area.

During the past decade this has been down 11 percent. And what is even more important, in the younger age groups, below 65, it is down 20 percent.

CARDIOVASCULAR SURGERY

So you can see that considerable progress has been made. And I can report progress in the areas of cardiovascular surgery which are really almost unprecedented, which were undreamed of 20 years ago, and the things we can do today in certain forms of heart disease. The fact still remains that it causes more deaths than any other deaths combined; and the fact also remains we are getting a greater absolute number of deaths each year. So we still have a tremendous problem in this area.

FUNDING REQUISITE

Now, I can also report progress in certain specific areas which I would like to refer to in a few moments, but what I want to do particularly, Mr. Chairman, is to point out that if we are to continue with the progress we have started, we must support certain definite activities in this field.

I would like to speak about two particular activities in support of programs, the first being what has been termed the myocardial infarction-artificial heart program.

You will recall the beginning of this program when it was first initiated by your committee, along with your counterpart in the House of Representatives; you provided the initial funds to support this program. It is now well underway and the progress that we can report in this area, I think, is very impressive.

BUDGET REQUEST INCREASE

The program has been set at the figure of \$13.7 million. I believe this program can be moved far more rapidly, advanced in a much more effective way if the figure can be increased to \$20 million. I think we have evidence of the need for this, that progress can be made more rapidly and I shall point out to you a few of the things that have occurred with the funds in support of this activity.

ARTIFICIAL HEART AND MECHANICAL CIRCULATION ASSISTANCE

Five years ago the idea of an artificial heart, for example, and even of assistance to the circulation by mechanical means was considered by many as a kind of fantasy.

Today we can report that we have a mechanical pump that can be used successfully in the support of temporary assistance to circulation. This is, of course, merely a very beginning step toward the ultimate development of a true artificial heart.

The fact remains that we do have this. We can use it for days or weeks in support of circulation of individuals, and it is particularly useful in the myocardial infarction program, because if we are going to make any progress in this area, we are going to have to develop some means of supporting circulation temporarily in people with severe forms of myocardial infarction, who otherwise would die from the kinds and methods of treatment we have available at the present time.

RESEARCH SPINOFFS

Now, the spinoffs, too, from this kind of research, this kind of support of research, is evident from some of the other things that have been done which represent progress, and I have brought along just a few things to show you in this regard as evidence of this kind of activity and the progress that is made from research.

ARTIFICIAL HEART VALVE

Now, about 6 years ago we first began using artificial heart valves to replace diseased valves in the heart, most of which are caused by rheumatic heart disease but may be caused by other forms of diseases; and up to that time we had no way of treating these patients. They ultimately died of their disease, and in the great majority of patients in this category we are dealing with young individuals, under 65 years of age.

About 6 years ago there was developed a method of dealing with this problem and Dr. Edward Starr, through his own research efforts, provided the first successful application of an artificial valve.

These have been used quite successfully over the past 5 or 6 years, but we know that they have certain drawbacks. They have certain complications. Among these and most important is the fact that they develop, provide the means of developing what we call thromboembolic complications.

DACRON VELOUR COVERING

This comes from the blood interface. Blood is a fluid. When it comes in contact with any foreign agent, it will clot and this leads to problems.

The solution of this problem, at least on a temporary basis, is by the use of a mechanical pump which was derived from the surface that we call Dacron velour. I have a graph of what is meant by that. It shows the type of surface that exists in this regard.

Then we utilized this knowledge in the development of artificial valves, so we have covered these valves with this dacron velour and here you see an example of what happens experimentally inside the heart. These two photographs here show the covering that occurs. This covering is essentially the normal covering in the heart and it provides the blood interface that is perfectly normal in the sense that the blood tolerates this surface in the same way that—and, in fact, reacts to this surface. It creates in the same way it does to its normal environment, thus eliminating the complications that commonly occur from a foreign insert.

These are just examples of the kind of covered valves you see that we have formed. They are really just prototypes, but we are now beginning to use these in patients.

In fact, my own experience we have done about 20 patients on whom we have used these kinds of valves.

Senator HILL. Twenty?

Dr. DE BAKEY. About 20.

Senator HILL. What is this substance here?

Dr. DE BAKEY. That is a dacron velour, and this is a photograph of the surface. Velour is a fabric in which the surface is represented

by these little loops, you see, of dacron, and that enmeshes the fibrin that is formed by the blood, and then seals cover that surface in the manner that you see there. So this is the natural development of a normal surface for blood that we create by artificial means, thus solving our problem.

ARTIFICIAL HEART POWER SOURCE

To give you another illustration of the spinoff in this kind of research, I was out in the State of Washington just last week visiting several research laboratories. I was out there actually to give a lecture in response to an invitation for a science seminar series they have out there.

This is in the Hanford Atomic Energy area, and one of the laboratories out there, the Douglas Laboratories, has a contract from the National Heart Institute for the development of a power source for an artificial heart.

THERMONUCLEAR BATTERY

I saw some of the activities they are doing in this regard as a consequence of this type of research, and research program. They now have on the drawing board a method of developing a battery, thermonuclear battery, which hopefully will give at least 7 watts and which has a half life of 87 years. If this proves to be a practical development, then we have a power source, because that is all we need to mechanize an artificial heart.

Now, this power source would be implantable in the body, but already they have evidence that they can provide a similar type of power source but using much less wattage, about one two-hundredths of a watt, which would be in this development probably the size of a quarter for a power source for a Pacemaker.

Now, we are using Pacemakers today every day.

Senator HILL. You have to change those about every 6 years, don't you?

Dr. DE BAKEY. Not only that, they break down. We have wires that break down, so they are far from satisfactory. But at least they are better than having nothing. But this would provide——

Senator HILL. Far superior?

Dr. DE BAKEY. Not only far superior, it would solve the problem. It would make the whole application complete—much simplified procedure and it would solve the whole problem of the complications we now have. This is a direct spinoff of the research that emanates from the support by the National Heart Institute, funds derived from this committee, supported by this committee, initiated by this committee and it shows how you start research in one area, knowledge coming from this research can then be applied directly to patients as the research proceeds.

So I think it is a beautiful example of how research support ultimately gets to the patients.

Now, today this can take place far more rapidly than it could in the future. That is why I think it is so important to recognize and increase our research at this time rather than decreasing them.

PREPARED STATEMENT

The second program I wanted to mention briefly and, incidentally, Mr. Chairman, I do have a statement here which I should like to insert in the record.

Senator HILL. We will have that appear in full in the record. (The statement follows:)

I am most gratefully appreciative of the opportunity to come before you again and to speak today in behalf of some of our national health programs, and particularly to emphasize significant financial needs in order to support and advance more rapidly certain research programs and activities concerned with diseases of the heart and blood vessels, under the sponsorship of the National Heart Institute.

As you know, both in terms of death rate and economic cost to the nation, disease of the cardiovascular system continues to maintain its leading position. Thus, according to the National Center for Vital Statistics, cardiovascular diseases caused one million or about 54% of the approximately 1.83 million deaths reported from all causes in 1965. While these deaths occurred more frequently among the aged, accounting for two out of every three deaths among Americans over 65, it is important to realize that they also claimed 261,000 lives among those individuals under 65 years of age, or 35% of all deaths in this group. Of particular importance is the fact that 560,000 deaths were attributed to atherosclerotic heart disease, and another 201,000 to strokes, thus making atherosclerosis and its complications far and away the major killer in our population. Moreover, the over-all death rate from atherosclerotic heart disease rose about 11% over the previous decade, and this rise was apparent in all age groups over 45 years of age.

Despite these facts there are reasons to believe that we are making encouraging progress in our approaches to this problem. This is evidenced by a comparison of certain death rates among these diseases over the ten year period, 1955 to 1965. Thus, death rates have declined in every major cardiovascular disease category during this period with the exception of atherosclerotic heart disease. The most striking of these reductions occurred in the cases of hypertension and rheumatic heart disease, the figures being lowered respectively 46% and 33%. Substantial reductions also were evident for stroke, which was down 11%, particularly among those individuals under 65 years of age, in which case it was down nearly 20%. As a consequence of these reductions the over-all death rate from cardiovascular disease fell by five percent during this period.

It should be noted that these declines in death rates have occurred particularly in those categories of cardiovascular diseases where significant improvements in treatment have come about as a result of earlier research efforts. Thus, the declining death rate from hypertension reflects the introduction of drugs effective in the reduction of high blood pressure.

While it is encouraging to note these progressive developments in treatment and in declining death rates in certain areas of heart disease, the fact remains that cardiovascular diseases continue to produce an enormous economic cost to the nation. These costs are reflected in the appended table (Attachment A). The figures in this table are made up almost entirely of calculated losses from future income for individuals dying from cardiovascular disease and are based on standard formulas for use for such purposes. Adding to the table of 19 billion dollars of such estimated costs the direct and indirect cost of hospitalization and care, an approximate figure of 25 billion dollars annually is obtained for the cost of cardiovascular disease in the United States. It thus becomes evident that there is great and urgent need not only to maintain but to increase our research efforts on these cardiovascular problems through the National Heart Institute.

Accordingly, I should like to speak particularly about certain specific programs that I believe deserve your special consideration. The first of these is concerned with the myocardial infarction-artificial heart program. Since I had the privilege of discussing the potential value of this project before this committee several years ago, you are familiar with its early development. I am happy to report to you that considerable progress has been made since that time and we have now developed and have successfully used both experimentally and clinically

an artificial heart pump that can provide temporary assistance to the heart for periods ranging from days to several weeks. Thus, we have taken a real step forward in our ultimate objective in developing an artificial heart. Since there are still a number of engineering as well as physiologic problems to be solved, it has been wisely determined that concentration of efforts should be made at this time upon the immediate objective of developing ventricular assist devices, and secondly, to broaden the program to include acceleration and coordination of these studies with those relating to myocardial insufficiency. Thus, there has been developed along with this program the myocardial infarction study project. The latter consists of a two-pronged attack with similar objectives concentrating on the reduction of mortality from myocardial infarction by improvement of medical care and the utilization of temporary ventricular assistance. Research efforts will also be directed towards the general area of physiologic control, the method of transmitting energy into the body, energy storage and conversion, physiologic effects, and the development of improved oxygenators for these purposes.

The appropriation requested in 1968 of 13.7 million for this overall program remains the same as the amount apportioned in 1967. It has been anticipated that all these funds will be obligated by the end of the fiscal year and that they will be distributed roughly as 5.8 million to the myocardial infarction program and 7.9 million to the artificial heart program. In my opinion this program can be much advanced by an increase in this budget to approximately 20 million dollars.

The program for the myocardial infarction study will include a number of projects. The first major activity among these to be supported will consist of a small number of well-planned myocardial infarction study centers. These facilities are intended to provide a means of bringing to bear on the problem of myocardial infarction the most advanced techniques and concepts of the biologic and physical sciences in a setting conducive to the development of new concepts of treatment. Each of the research facilities will consist of a small number of beds and a coronary care unit especially staffed and equipped to provide for careful and critical clinical investigations and optimal patient care. In addition, the centers will provide laboratories and staff for basic research which is related directly to the clinical problems under investigation in the unit. Since the first announcement of this activity which was made in January of this year, I have been informed that 43 proposals have been received from distinguished research institutions and are presently undergoing review. It is expected that at least six of these will be funded during the fiscal year 1967, and that perhaps six more can be expected to be funded in fiscal 1968. The high level of interest and the great distinction of the groups which have responded to this program clearly evince the need for this advanced research program and the likelihood of success of these endeavors.

The other aspects of the myocardial infarction program will be concerned with the support of research activities to develop and improve an animal model of myocardial infarction. The lack of an appropriate animal model for this purpose has restricted certain types of investigations. The development of such models will permit the more effective application of several disciplines and technological developments to this problem and will provide a way for more effective means of testing new methods of treatment. It seems likely that several scientific fields not presently involved might make important contributions to the study of myocardial infarction. The study of metabolism of heart, for example, has advanced considerably in recent years, but these studies and techniques have not been extensively applied to acute myocardial infarction in the human. Such a study might produce leads for further investigations that have promise for contributing to the understanding of the biochemical changes that take place in myocardial infarction. Most of the present methods of treatment are designed to prevent or minimize complications of the illness. Hopefully these studies will provide a basis for new types of treatment directed toward the injured heart muscle itself.

More than half the patients dying of myocardial infarction have sudden deaths, and a large number of these individuals are relatively young and vigorous and otherwise in good health. Since these patients die unattended, it is difficult to conceive or design critical research programs to study them and to attempt treatment. But several potential avenues of approach are being considered, such

as detailed analyses of sudden deaths which occur while patients are being observed for other purposes, meticulous and detailed recording of the series of events which preceded death, and an intensive study of populations known to be of high risk, such as those with diabetes or hypertension. The myocardial infarction program is currently evaluating the alternative approaches to this important problem.

A second and important newly developed project which I should like to emphasize as deserving your consideration and support is that concerned with the development of Cardiovascular Research and Training Centers. You will recall that your Committee gave consideration to this program and initiated its development by a supplemental grant for this purpose late in 1966, which was derived from the recommendations of the President's Commission on Heart Disease, Cancer, and Stroke. The Heart Council at its last meeting agreed upon a specific definition of these centers making it possible to proceed to operational grants.

To date eight planning grants have been awarded and two approved requests are awaiting action of the Heart Council in June, bringing the total of planning grant awards to ten. The National Heart Institute hopes to establish approximately twelve such centers in the next five or six years. It should be possible for enough institutions to meet the standards of excellence and other defined requirements and to permit establishment of these centers on a wide geographical distribution across the nation. Although their scope and reputation will be national or even international, obviously they will have a broad and important impact on cardiovascular research training and care in the regions in which they are situated. These centers are closely related to the Regional Medical Programs and indeed essential to their development.

It is estimated that each of these centers may require support and initially may require as much as \$4 million in construction funds. The present budget as currently constituted provides no source either for operational or construction funds for these Cardiovascular Research and Training Centers. Because of the exceedingly limited funds available for growth of research and training programs under the proposed budget, the Cardiovascular Research and Training Centers will be competing directly with ongoing project research grants and graduate training grant programs for dollar support. Certainly it is unlikely that adequate funding of the newly constituted centers will be forthcoming in the face of such competition. As regards construction funds, these might be obtained on a matching basis through grants from the Division of Research Facilities, but here also the competition for research funding will be so intense as to render unlikely adequate funding of the centers program. As you know, the present budget does contain \$800,000 for additional planning grants for such centers. However, I would point out that planning grants awarded in 1966 have been ably prosecuted in certain universities, and it is now estimated that several of these centers can begin operational activities within the next twelve months. To lose the momentum which has been generated for the development of these cardiovascular research and training centers would indeed be jeopardous. I would propose, therefore, for the year 1968 a line-item addition to the budget of \$10,000,000 in support of Cardiovascular Research Centers, and that serious planning be undertaken now to provide adequate construction funds for these centers.

Finally, Mr. Chairman, I should like to point out that the present budget figure of \$106,628,000 for research grant support constitutes a serious cutback in this important area of activity. This figure provides for an increase of \$1,165,000 over the 1967 budget, which was in the amount of \$105,996,000. In effect this means a net decrease of \$533,000 in the funds available for general research grant support. I have been informed that the National Heart Institute's projection for 1968 is that they will have about 250 approved grants amounting to about \$9 million that will go unfunded if the present budget figure for 1968 remains as it is at present.

I should like, therefore, to point out again that at a time when we need to be moving ahead and advancing our research activities in this important area of cardiovascular disease, causing the deaths of more than a million people in the United States and producing an economic burden to the country of over 25 billion dollars annually, we should make every effort to increase—not decrease—our funds for research activities.

ATTACHMENT A

Mortality and indirect economic costs, 1965, for diseases of concern to the National Heart Institute

Disease	Deaths in 1965			Future earnings lost		Percent change from 1955	
	Number	Rate per 100,000	Per- cent of total	Amount (mil- lions)	Per- cent of total	Num- ber of deaths	Death rate ¹
All causes of death.....	1,828,000	943.3	100.0	\$50,234.5	100.0	+19.6	-3.6
Cardiovascular diseases.....	1,000,000	516.0	54.7	19,406.2	38.6	+21.9	-5.1
Arteriosclerotic heart disease.....	559,000	288.6	30.6	11,417.8	22.7	+40.2	+11.1
Cerebrovascular disease.....	201,000	103.7	11.0	3,150.5	6.3	+15.5	-10.9
Hypertensive disease.....	66,607	34.4	3.6	1,288.6	2.6	-31.1	-45.8
Rheumatic heart disease.....	15,500	8.0	.8	649.6	1.3	-20.7	-32.8
Congenital heart disease.....	10,000	5.1	.5	542.2	1.1	+6.6	-5.4
Other cardiovascular diseases.....	147,700	76.2	8.1	2,857.5	4.7	+21.3	-12.8
Bronchitis and emphysema.....	23,400	12.1	1.3	498.1	1.0	+302.1	+241.2
All other causes of death.....	805,000	415.2	44.1	30,330.3	60.4	+16.0	-3.8

¹ Adjusted for change in age distribution of the population.

CARDIOVASCULAR RESEARCH AND TRAINING CENTERS

Dr. DE BAKERY. The second program I want to talk about which has bearing upon this and other programs is the cardiovascular research and training centers.

You will recall that your committee, along with its counterpart in the House, provided a planning grant of \$800,000 for this purpose last year. The importance of this program lies in the fact that it really is the wellspring for all of our cardiovascular research and training today; and the reason for that lies in the fact that we are providing now more and more the whole broad field of science in terms of the knowledge gained from research activities in all of science and focusing these upon the direct aspects of the problems of cardiovascular diseases.

Now, this means, for example, the utilization of individuals skilled in the various scientific disciplines, not only the whole prospect of clinical and biological sciences, particularly in the other disciplines such as physical sciences and this includes physical engineers, chemical engineers. It includes computer scientists; it includes mathematicians; it includes the whole broad field of science, people who have scientific knowledge in the whole area of science.

We are bringing them closer and closer into the medical field and particularly into the cardiovascular field. To see a team in the cardiovascular center work, you recognize these scientific disciplines working together. We have this in our own setup and this is what is needed for the development of the cardiovascular research and training centers.

ESSENTIAL ELEMENT OF REGIONAL MEDICAL PROGRAMS

This also constitutes a very important element of the regional medical programs, because without these centers the regional medical programs do not have a basic framework upon which to activate the rest of the program.

Senator HILL. They go together, don't they?

Dr. DE BAKEY. They go together, they are absolutely essential, because if you are going to have a regional program, you have to have a center for the program. You have to have a place where people can be trained to go out, where people from the rural areas can be brought in and trained. The whole objective of the regional medical program is to bring to the people as quickly as possible knowledge gained from research activities and this is the way it has to be done. So you have to have a place for this research activity.

BUDGET REQUEST INADEQUACY

In the present budget there is no money for the operation of these centers. You have again the same amount of money for planning. Well, they have been planning for over a year. They now have need for operational activities and over this next year it is estimated that they will need somewhere in the neighborhood of approximately \$10 million, in my opinion, to get this program off the ground and move it, which I think it needs to do. Otherwise, we are going to be delayed another year getting this program activated and it can be activated in the 1968 budget.

I will let my colleague, Dr. Reeves, talk about this more because he will have a more detailed statement to state about this.

Finally, Mr. Chairman, I think we want to say if we are going to move this whole cardiovascular field as rapidly as it can be moved and ought to be moved in terms of the enormity of the problem, we face the cost, as I indicated, the economic cost of the Nation, the enormity of the number of deaths resulting from this area. I think it is absolutely essential that we do more in the way of supporting activities in research.

To illustrate what I mean, Mr. Chairman. If we take the present budget figure for the 1968 budget which is being proposed and compare this with the 1967 budget, we have an actual increase in the budget, an absolute increase in the budget, of \$1,165,000.

GENERAL RESEARCH SUPPORT GRANT DECREASE

Now, this actually means a net decrease of \$533,000 in the funds available for general research support grants.

Now, if we project what is estimated by the NIH in terms of its projection for 1968 of just general research support programs, they expect to have 250 approved projects for research, amounting to about \$9 million.

If the present budget figure remains as it is, it will be impossible to support these additional 250 approved grants.

Now, at the time, Mr. Chairman, when we have the momentum generated, when we have the tremendous interest and I think the enthusiasm to move ahead in this area, when we have, you might say, the actual knowledge to move ahead in this field, it seems to me this is no time to decrease the budget. Certainly we should at least maintain the same momentum and you are not talking about large increases; we are not talking about large sums of money. These are relatively small sums, conservative sums. These are increases that really amount to a very small amount. When I say \$20—\$30 million in terms of the

total needs, this is a relatively small amount. But it is enough to maintain the momentum, and if we allow the budget to go in as it presently is, we cannot maintain this momentum. We will create not only a sort of depression in this area, but I think we will lose some of the momentum which we have now gained, and I think this is the wrong time to do it.

STATEMENT OF DR. REEVES

PREPARED STATEMENT

Dr. DeBAKEY. Now, Mr. Chairman, I would like now to ask my colleague, Dr. Reeves, to continue our testimony.

Senator HILL. All right, Doctor.

Dr. REEVES. Mr. Hill, I do have a statement I would like to refer to and then will give it to you.

Senator HILL. We will have it appear in the record in full, Doctor. (The statement follows:)

I am Dr. T. Joseph Reeves, Alabama Heart Research Professor, Professor of Medicine and Director of the Cardiovascular Research and Training Program at the University of Alabama. I am a member of the National Advisory Committee of the Heart Disease Control Program of the Bureau of State Services, and I am chairman of the Program Project Review Committee A of the National Heart Institute, which is concerned with the scientific review of large and long-term heart research programs. I am also chairman of the Regional Advisory Committee for Heart Disease, Cancer and Stroke for the Alabama region.

I am here today primarily to express my grave concern regarding the future of the Cardiovascular Research and Training Center Program of the National Heart Institute of the National Institutes of Health. During the past two years planning grants have been awarded by the National Heart Institute to eight outstanding medical centers throughout the Country for the purpose of planning specialized cardiovascular research and training centers. It is my understanding that the National Heart Institute anticipates that approximately twelve more such planning grants will be awarded during the coming year, hopefully leading to the establishment of some twelve cardiovascular research and training centers for the entire Country. Each of the centers that has thus far received a planning grant has an outstanding faculty devoted to cardiovascular research and training. Each has a long tradition of excellence in this field. In addition, each of these centers have expressed their conviction that the development of such a center would materially accelerate their research and training efforts in the cardiovascular field, in both a quantitative and qualitative sense.

These cardiovascular research and training centers are conceived as multi-disciplinary groups of outstanding physicians, scientists and teachers brought together in a coordinated program aimed at heart and circulatory diseases. As envisioned, they will bring together physicians, surgeons, pediatricians, physiologists, biochemists, mathematicians, statisticians, engineers, molecular biologists, pathologists, and other scientists concerned with the structure and function of the heart and blood vessels in health and disease. Through intimate association of such individual investigators and teachers a far more efficient assault on heart and blood vessel disease may be achieved. In addition, the stimulation to the individual scientist made possible by the physical and intellectual proximity of others dedicated to the same ultimate goal, but possessed of the special knowledge and skills of other disciplines, may provide the perception and inspiration required for the solution of the most difficult and challenging problems remaining in this vital area of medicine.

I am convinced that the rapid development of such centers would tremendously accelerate and increase the capacity of our medical schools to meet the critical manpower shortage of cardiovascular specialists that now confronts this Nation. The adequate training of skilled cardiologists and cardiovascular surgeons requires the collaborative efforts of a multi-disciplinary team such as that envisioned for these specialized centers. In addition, such centers will provide a fertile and stimulating environment for the nurture of a non-clinical scientist

whose special knowledge is so critically required if the ravages of heart disease are to be soon controlled.

These centers will also allow an acceleration of the training efforts of the medical school and the allied health sciences concerned with the care of the patient with heart disease. It is my opinion that the implementation of the regional programs for heart disease, cancer and stroke will be seriously and gravely handicapped unless the planning for such specialized cardiovascular research and training centers can be brought to fruition by adequate funding. I am convinced that if sufficient funding for an orderly development of these centers is not soon forthcoming, the entire heart research and training program of this Country will be materially injured, as will the development of the regional medical programs.

I have just learned that the 1968 Budget proposed for all of the extra-bill programs of the National Heart Institute will require a reduction in the number of scientists to be supported during this fiscal year. Although the actual budget is increased slightly, the actual cost of research and training has increased more than the amount the budget has been incremented. Therefore, more than 250 research grants approved by the scientific review bodies of the National Heart Institute will not be funded. These unfunded but approved grants total more than nine million dollars. More than one million dollars of approved training programs will not be funded under this austerity budget. I cite these facts as evidence that the National Heart Institute cannot under the proposed budget provide the necessary funds for the development of the cardiovascular research and training centers that are presently in the planning stages. At least three, and possibly four, of these centers could and should be brought into a limited operational phase during the next fiscal year.

From our own experience and planning to date at the University of Alabama, I believe that at least 1.5-2 million dollars per center per year will be required during this initial operating period. This means that 4.5-8.0 millions of dollars should be made available during the next fiscal year for these centers for such initial operational purposes. In addition, I believe that it is essential for additional monies to be made available for new construction to house, or partially house, these centers. The limiting factor in our own planning, as in others, is an absolute lack of research and training space. Existing programs are inadequately housed in physically dispersed units. Clearly the development of meaningful inter-disciplinary cardiovascular research and training centers cannot be achieved within the present severely limited existing space. It is our belief that a minimum of 30,000 square feet of additional usable laboratory and teaching space will be required as initial housing for these centers. At present building costs of approximately 4.2 million dollars per center will be required. At least 12.6 million dollars must be obtained if the centers are to be adequately housed. We believe that it is highly unrealistic for existing (50-50) matching formulae to be applied to this building program. In view of the urgency of the requirement for space and the importance of the program to the Nation, something in the neighborhood of a 90-10 formula such as that applied to the mental retardation centers would be much more appropriate. Few, if any, of the universities can immediately provide 2-2.5 million dollars in matching money for such specialized purposes. They could more reasonably be expected to provide 0.25-0.5 millions of dollars within a reasonably brief period of time. This means that between 9 and 12 millions of dollars should be appropriated for the fiscal year 1968 for such a building program.

Finally, in view of the large sums of money involved, and in recognition of the complexities of the development and review of such large grant requests, I believe that such monies should be made available for the National Heart Institute for periods longer than 12 months. It is my understanding that the regional medical programs operate on an 18-month budget. It seems highly reasonable to allow the National Heart Institute to do the same with respect to these large and complex cardiovascular research and training center programs.

MYOCARDIAL INFARCTION HEART PROGRAM

Dr. REEVES. I would like, first of all, to echo and support in the strongest possible way I can the things that Dr. De Bakey has said about the importance of the myocardial infarction heart program, and

the contribution that it has already made in an area of heart disease that accounts for the great mass of deaths.

CARDIOVASCULAR RESEARCH AND TRAINING CENTERS

I would like to focus my own remarks on the problem of the cardiovascular research and training centers.

In the past 2 years the National Heart Institute has awarded eight planning grants to eight outstanding medical centers throughout this country. These are centers with a long tradition of excellence in cardiovascular research in training. They have faculties that have been assembled that are dedicated to this purpose. They have undertaken to develop the administrative mechanisms that will allow the development of such a categorical center in a medical school, and those are significant steps because this involves the cutting across of many classical departmental lines.

CONCENTRATION OF PROFESSIONAL SKILLS

As Dr. De Bakey has said, the fundamental purpose of these centers is to bring together a sufficient concentration of scientists, physicians, surgeons, pediatricians, mathematicians, chemists, engineers—people from many disciplines—to focus on a common goal and that in relationship to the unsolved problems of heart disease.

Now, as I understand it, the National Heart Institute anticipates that approximately 12 more planning grants will be awarded during the coming fiscal year, bringing the total to 20. Of this it anticipates that 12 are highly acceptable—in fact, acceptable center applications will ultimately be approved.

ESSENTIAL ELEMENT OF REGIONAL MEDICAL PROGRAMS

I would like to also echo Dr. De Bakey's statement as to the importance of these centers to the regional programs. I have a dual interest in Alabama: I am chairman of the regional advisory committee for heart disease, cancer and stroke; and I am also charged with the responsibility of coordinating the planning for the cardiovascular research and training programs.

And I recognize from both of these capacities the absolute interaction of these two programs.

It is my absolute conviction that unless the centers are funded, that unless they can be developed with the rapidity, that the regional programs will suffer severe real injury as a result. The centers will not only serve as a real fountain of research of excellence, but they will serve as one of the primary sources of the highly skilled and specialized manpower that will be required to make the regional programs move.

MEDICAL MANPOWER SHORTAGE

The medical centers of this country and the medical profession and the allied health professions, I think, is faced as a result of the regional programs also with the demands of the Armed Forces for physicians, with the aging, increasing population, development of medical

skills and so on. I think we are faced with a very tremendous shortage of medical manpower at all levels.

I believe that these centers will be one of the fundamental mechanisms by which we will provide the trained manpower, nurses, surgeons, physicians, physician's assistants, technicians of all kinds, monitoring technicians that will be required if these regional programs are to function. So that I believe, as Dr. de Bakey has said, that we must now allow the momentum that has been gained to this point to be lost.

PLANNING GRANTS AND OPERATION INIATION

I believe that approximately three to four of the planning grants that have been awarded for the development of cardiovascular research and training centers should be and could be brought to fruition during the coming year in an initial operating phase if the funds are available.

Now, the only budget that is allowed is \$800,000 for more planning. The planning that started a year ago and, of course, since this represents in many institutions as in our own an extension of planning that has been underway for a great many years. The cardiovascular research and training concept in our center was originally started by Dr. Champlins, with Dr. Tinsley Harrison, and we are continuing with what he has started.

Many of these centers——

Senator HILL. What are some of the things you suggest here, Doctor?

INITIAL OPERATION COST

Dr. REEVES. I would say that each of the centers that are to be funded will require, during the initial operating phase, at least \$1.5 million, and probably a maximum of \$200 million. This will vary from center to center, depending upon the State, depending upon the number of people, and so on. This is operating money, Mr. Hill. This involves only the funds that are required to bring people from all of these disciplines together with perhaps very mild and modest renovation.

CONSTRUCTION REQUISITE

Senator HILL. No construction at all?

Dr. REEVES. That doesn't involve construction. I would say this is just for initial operations. If we are really going to make these things work, there must be some allowance for construction. We simply cannot develop the kind of program that is essential without some provision for new construction.

This does not mean that we cannot begin to operate the centers at the present time; it simply means that we cannot allow them to operate at the level of efficiency that we would hope for.

Senator HILL. Then it is entirely feasible if you have the funds?

Dr. REEVES. That's right. We can do that—I can speak not only from the standpoint of the University of Alabama, but because I am—in fact, I am chairman of one of the heart review committees for the National Heart Institute, concerned with the planning of such centers. I have had the opportunity of visiting other schools in the country, in fact most of them that are engaged in sufficient planning.

All of them can begin to operate effectively, but not at the most efficient level within existing space limitations. But I believe that we should begin to plan now and to recognize that fact that space, that additional space will be required.

I believe that approximately—in most of the centers something in the neighborhood of 30,000 square feet of usable—that is, assignable space for research and teaching purposes will be required sometime within the next 3 to 4 years.

CONSTRUCTION COST AND MATCHING REDUCTIONS

At the present time this would represent approximately \$4.2 million per center. I believe that it would be unrealistic to apply the existing 50–50 matching formula on such construction.

There are few universities that can afford to provide this kind of matching for such a specialized purpose. However, I think if some such formula as that which has been applied to the mental retardation centers were applied, that each of the universities could come up within a reasonably short period of time with the required funds.

Finally, I would like to thank you again, sir, for the chance of appearing before this committee.

Senator HILL. We certainly want to thank you.

Dr. REEVES. I add my voice to that of Dr. De Bakey's.

Senator HILL. We certainly appreciate your presence and statement here this morning.

STATEMENT OF DR. KRASNO

COMBATING HEART DISEASE WITH NEW DRUG ATROMID

Dr. DE BAKEY. Mr. Chairman, Dr. Louis Krasnow is now clinical professor of medicine at Stanford University and I would like to call upon him now.

Dr. KRASNO. Mr. Chairman, I want to take this opportunity of thanking you for permitting me to speak about a new drug called Atromid, which shows great promise in combating heart disease and with which we have had two and a half years of experience.

HEART DISEASE MORTALITY STATISTICS

Before, however, going into detail on the results up to this point in time, I would like to further amplify Dr. De Bakey's fundamental statistics on heart disease.

As I look at the clock, we have lost some 100 people in this country since we have begun this session.

Senator HILL. Since we started?

Dr. KRASNO. Since we started this morning. Approximately one person per minute around the clock, 24 hours a day, dies of some sort of cardiovascular disease, mostly coronary heart attack or stroke.

It is to be further noted that within the first hour after the first attack some 20 percent of the patients die; some 40 percent will not survive 6 weeks after the first heart attack. If they do survive, their risk of mortality subsequently is increased fivefold over a person who has never sustained a heart attack.

And, as Dr. De Bakey further pointed out, this comes at a time in life in many instances where the individual has just reached his or her prime—economically and socially.

ABNORMAL METABOLISM OF FATS

There are many factors, as we know now, associated with the development of heart attacks, but perhaps the one most investigated, most implicated, most well documented is the one involving the abnormal metabolism of fats.

This is further substantiated by the fact that in this country we have more heart disease than any other country in the world, we also consume more fats than any other country in the world. We have about seven times more heart attacks than they do in Japan, and we eat four times more fats than they do in Japan.

MAY 1, 1967, RELEASE BY FDA OF ATROMID

The point of all of this, Mr. Chairman, is in relation to this new drug called Atromid, which was recently released by the Food and Drug Administration as of May 1 this year.

We have been studying this drug since November 1964 and while it is too early to come to any definitive conclusions, it seems promising enough to warrant very substantial subsequent investigation. We could easily be on the threshold of making great inroads into this No. 1 killer in the United States.

DRUG STUDY

Now, in relation to our study, it was comprised of 1,200 men between the ages 40 to 60, half who were treated with Atromid and the other half who were not treated.

We found that it was a safe drug, having approximately 2 to 5 percent side effects, which were very minimal.

Senator HILL. Very small?

Dr. KRASNO. Yes, sir; and very easily overcome.

We found it an effective drug. That is, it would normalize the fats in the circulation which we know are involved in the blood clots subsequently causing heart attacks.

Now, we can make two claims at this point very safely in relation to this drug. One, that it is safe, relatively nontoxic; two, that it effectively controls abnormal metabolism of fats in the body.

The third and most important consideration is, Will this prevent heart attacks?

At this point in time, and I make no claim, but at this point in time we have observed that there are three times as many heart attacks in the untreated group as in the group treated with Atromid. As of this point in time we have observed that if a man has survived an initial heart attack, his chances are improved by 2½ times by being placed on Atromid.

PREVENTION AND TREATMENT POTENTIAL

I am hopeful that in a year or two or three from now these figures will still hold true. In the meantime, 1,200 people are a rather limited

group, but nonetheless sufficient to indicate to us that we have an agent here that holds great potential in the prevention and perhaps treatment of our No. 1 killer in the United States.

EXTENSIVE DRUG RESEARCH

Therefore, Mr. Chairman, may I urge that serious consideration be given to extensive research employing this agent and may I ask for another invitation a year or two from now to report again what I hopefully will find is compatible with our preliminary experience.

Senator HILL. I will invite you now to come back next year.

Dr. KRASNO. Thank you, Mr. Chairman.

Senator HILL. You don't want a subpoena, do you? Just an invitation?

Dr. KRASNO. Just an invitation.

TWO AND ONE-HALF YEAR TEST OF DRUG

Senator HILL. How did you get onto this Atromid?

Dr. KRASNO. Well, we have had a continuing interest and research program for the past 10 years in the field of heart disease and so anything that comes along that is new, that is safe, that is well documented and has promise, we proceed to test it in order to obtain firsthand information, and so as with other drugs we began to test Atromid 2½ years ago.

STUDY SUBJECTS

Dr. DE BAKEY. Mr. Chairman, I think you might be interested in the way Dr. Krasno is doing this and the population he has for this test.

Senator HILL. We would like to hear that.

Dr. KRASNO. This study is carried out on employees of United Air Lines in San Francisco. It is an ideal audience, because they come to work every day, most every day. We see them as often as we like.

Senator HILL. You know where to find them.

Dr. KRASNO. Yes; we know where to find them. They probably welcome an opportunity to come and see us and get away from the bench, but whatever their motivation is, our attrition since we started 2½ years ago is less than 3 percent, so it provides an excellent opportunity for long-term followup. And we incidentally are going to add another thousand people to this 1,200 within the next few weeks.

Senator HILL. You are?

Dr. KRASNO. Yes, sir.

Senator HILL. What will be about the average age of these people?

SUBJECT INCREASE OF YOUNGER PEOPLE

Dr. KRASNO. At the present time the average age is around 48. Our next thousand will be between ages 30 and 40. We are interested to see whether there is an importance in starting early in the 30-year-olds.

Senator HILL. That will be a part of your new study, then?

Dr. KRASNO. Yes, sir.

STATEMENT OF DR. WEINER

UTILIZATION OF KNOWLEDGE ACCUMULATION

Senator HILL. All right, Doctor.

Dr. DeBAKEY. Our next witness, Mr. Chairman, is Dr. John Weiner.

Senator HILL. All right, Doctor, glad to have you here, sir.

Dr. WEINER. Glad to be here, sir, and I would like to present this clinical trial for your consideration.

Senator HILL. All right, sir.

Dr. WEINER. And as the other distinguished gentlemen have indicated, heart disease continues to be a crucial problem in our country. I, however, would like to take a different attack than they have taken, because as I look back over what has been accomplished mainly through Federal support, it seems to me that we have accumulated a body of knowledge which we may now take advantage of in the sense that a lot of the spadework is done; now let's see if this knowledge can be planted and bear fruit.

TWOFOOLD RESEARCH PURPOSE

Along these lines, sir, I would like to suggest that the basic purpose for the heart disease research that has been conducted in this country is essentially twofold: One, to prevent the occurrence of heart disease in men and women; and two, to prolong the life and well-being of the patient surviving the initial heart attack.

FATS IN BLOOD

As has been indicated by these other distinguished gentlemen, fats in blood seem to be an undisputable problem. This abnormality has been observed repeatedly and relationship between the high fat level and blood clots has also been demonstrated.

CORONARY DRUG PROJECT

The National Heart Institute is currently supporting a national study to investigate methods of treatment to reduce this abnormality of the blood fat levels and hence to increase the length of life in heart patients.

This study, as you know, sir, the coronary drug project, is now starting its third year. Six treatments are being used in that program in the prevention of second and third heart attacks in men who have already survived their first heart attacks. These men range in age between 30 and 64.

DRUG ATROMID-S

Now, the men that created this coronary drug project are to be commended because of their foresight, because they included in that program as one of the treatments to be tested the drug Atromid-S that Dr. Krasno has been describing.

This drug in 1960 to 1962 was not as well known as it is now, and as I say, they were extremely far sighted to have considered it at all. Since the coronary drug project was developed, Atromid-S has

received considerable study in the United Kingdom, and as Dr. Krasno has pointed out, the drug has been found on repeated studies to be relatively free of side effects. Essentially, as I recall from the literature, the main complaints are some minor gastrointestinal distress and some weight gain.

Atromid-S has been shown to effectively lower the levels of the blood fats and has been studied to the extent where it may also interfere with the role played by the fats in developing blood clots.

The effectiveness of Atromid-S in prolonging life in patients surviving the first heart attack is being investigated in clinical trials in the United Kingdom and here, as one of the six drugs being tested in our own coronary drug project.

Preliminary studies in the United Kingdom have found survival to be increased 30 to 40 percent by the use of this drug. I might hasten to add here these results are in uncontrolled trials. The controlled trials in the United Kingdom are just underway.

If these preliminary uncontrolled studies were to hold up, then we would have an effective treatment in prolonging life and preventing second and third heart attacks and death.

CLINICAL TRIAL PROPOSAL

The research findings to date then suggest that we should begin to intensively study Atromid-S in men and in women, in normal people and in patients with heart disease.

DISEASED AND NONDISEASED MALE AND FEMALE SUBJECTS

In order to do so, I would like to propose the following clinical trial. We need 16,000 individuals, 8,000 men and 8,000 women, who should be recruited nationally. Four thousand of these men and 4,000 women, all normals, free of heart disease, would be recruited in order to study primary prevention; namely, to prevent the initial heart attack. Four thousand men and 4,000 women with documented evidence of heart disease would be recruited in order to study secondary prevention; namely, to prevent the second and third attacks and to prolong the life of people who have already had heart attacks.

SUBJECT AGE RANGES

The men selected should range between the ages of 40 to 65. Women selected should range in age from 45 to 65. Now, while heart disease typically, at least from the lay point of view, has been considered a male disease, the occurrence of heart disease in women increases with the onset of menopause and becomes quite a problem in terms of deaths and in terms of survival.

Hence, here is a need to develop an effective treatment program in the female patient with heart disease as well as to evaluate Atromid-S in prevention of heart attacks in the normal postmenopausal woman.

SUBJECT EVALUATION FOR RISK FACTORS

The normal individuals would have to be carefully evaluated to determine their risks of developing coronary heart disease. A number

of studies has suggested that these risk factors are the fat levels, as I mentioned previously; family history of heart disease which we cannot control but can take into account, the body type of the individual has been named a number of times as an important risk factor, lack of exercise, cigarette smoking and, last but not least, emotional stress. These are the factors which influence the normal person's chances of developing heart disease.

SUBJECT EVALUATION FOR SURVIVAL FACTORS

The patients with heart disease should be carefully evaluated to determine the presence of factors affecting their survival. Patients with heart disease are not all alike, as you well know, sir.

The factors that do affect their survival—these factors are congestive heart failure, arrhythmia; diabetes, abnormal thyroid function; complications during the acute course of the heart attack such as shock; and the presence of other life-threatening diseases.

These factors have been found to be important both singly and in combination. Accordingly, to attack the problem, we suggest the research design that is illustrated in table 1 of the material that I have presented to you in table 1, sir, you see here that we have subdivided these 16,000 people into essentially four groups, with two groups in the men dealing with primary prevention in normal individuals and the secondary prevention in the survivors of initial heart attacks; and the same design for the women.

IDEAL DESIGN FOR DETERMINATION OF ATROMID-S EFFECTIVENESS

Now, this basic design is ideal to determine the effect of Atromid-S in preventing heart disease given that you have a low risk or high risk of developing the disease, given that you are a man or a woman, and the effectiveness of Atromid-S in surviving the heart disease given that you had a low risk or a high risk.

REQUIREMENTS

In the following tables, tables 2, 3, and 4, we lay out some of the requirements for the clinical trial.

COMMUNITY EFFORT, SUBJECT COOPERATION AND SCIENTIST DEDICATION

Now, these requirements are generated from the previous knowledge that we have acquired in studying this disease in a community setting. We know that we must organize the community effort through effective educational programs to back such clinical trials in order to get the initial support necessary to recruit the patients and the normal individuals. We know that it is necessary to continue effective educational programs in order to insure that the local investigators do a careful, scientific study, and that the patients and normal persons participate over the 5-year study period.

COORDINATING CENTER

We know that in order to accomplish this, we need a coordinating center, a statistical headquarters so to speak, where the scientists and

the statisticians and the rest of the team can come together and work out the details of making such an elaborate program work.

CENTRAL LABORATORY

We know we need a central laboratory to process the large number of specimens here that have to be studied, the blood fats, the endocrine substances, the enzymes, the clotting factors, the trace metals; that is, all of the complex ways of assessing the extensiveness of the disease in the individual.

This program, as I say, sir, is spelled out in these charts.

I would like, if I may, to devote some attention to the requirements in terms of budget for such a program.

TRIAL BUDGET RECOMMENDATION

Senator HILL. All right.

Dr. WEINER. The budget is shown in table 5. We on evaluating this particular trial are suggesting a budget for the first year of \$7.7 million. The coordinating center, which is the group that must develop the programs designed to recruit and process the 16,000 subjects to be studied. The necessary facilities, staff, and equipment may be directly related to the ultimate goal of 16,000 subjects, and it is estimated for the first year to be about \$200 per patient for 16,000 patients.

This includes the cost of protocol, manual of operations and the educational programs for professional societies and local communities; of preparing for the analysis of data by high-speed computers; of preparing and dispensing medications; and for the training of personnel.

The central laboratory will require funds to build up its equipment, its personnel and to prepare as quickly as possible for samples, because if we provide a good educational program during the first year, we can recruit, because we are dealing with normals as well as with patients with heart disease, up to 5,000 subjects.

I would like to emphasize that the reason that I am so optimistic in that estimate of 5,000 subjects is because we are dealing with normals as well as with patients and we are dealing with men as well as with women.

These first specimens then for the laboratory must bear the developmental cost and are estimated at about \$300 per specimen.

The cooperative clinics must screen the subjects closely—whether you come into a clinic as a so-called normal or you come into the clinic as a so-called patient with heart disease, you must be carefully evaluated to insure that you have been classified correctly.

This evaluation frequently requires several thorough examinations. We must secure previous history of the subject from his private physician and from the hospitals in which he was treated. Communication between the clinic and the coordinating center must be established. The control procedures, to insure accuracy of clinical measurements, must be developed. These costs, when related to the patient and the normal subject load expected in the first year, are higher than the later years, because many subjects and the patients screened will be found to be unsuitable for the trial.

If approximately 5,000 patients are recruited during the first year, it is estimated that the cost per patient would be \$600.

PREPARED STATEMENT

I notice we are running behind. May I present the budget as we have presented it here and sum up?

Senator HILL. Go right ahead, sir.

(The statement follows:)

CLINICAL TRIAL OF ATROMID-S IN THE PRIMARY AND SECONDARY PREVENTION OF HEART ATTACKS AND DEATHS DUE TO HEART DISEASE

TABLE 1.—*Proposed research design for clinical trial of Atromid-S in the primary and secondary prevention of heart attacks and deaths due to heart disease*

MEN							
Primary prevention (normal individuals)				Secondary prevention (survivors of 1 or more heart attacks)			
Low risk of heart attack (subjects)		High risk of heart attack (subjects)		Low risk of heart attack (subjects)		High risk of heart attack (subjects)	
Placebo	Atromid-S	Placebo	Atromid-S	Placebo	Atromid-S	Placebo	Atromid-S
1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Total normal males, 4,000				Total males with heart disease, 4,000			

WOMEN							
Primary prevention (normal individuals)				Secondary prevention (survivors of 1 or more heart attacks)			
Low risk of heart attack (subjects)		High risk of heart attack (subjects)		Low risk of heart attack (subjects)		High risk of heart attack (subjects)	
Placebo	Atromid-S	Placebo	Atromid-S	Placebo	Atromid-S	Placebo	Atromid-S
1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Total normal females, 4,000				Total females with heart disease, 4,000			

TABLE 2.—*First year of the proposed clinical trial of Atromid-S in the primary and secondary prevention of heart attacks and deaths due to heart disease*

Organization of the study:

1. Establish Steering Committee.
2. Establish Coordinating Center.
3. Establish Central Laboratory.
4. Enlist investigators.

Educational program:

1. Recruit aid from national and local heart associations, medical associations, civic groups, State and governmental agencies.
2. Training programs for clinic, laboratory, and analysis personnel.
3. Educational programs in local communities.
4. Educational programs for volunteers (normal subjects and patients with heart disease).

Establish clinics:

1. Medical schools.
2. Community health centers.

Screening program:

1. Identify normal individuals.
2. Document the existence of heart disease.

Table 3. Second, Third, and Fourth Year of the Proposed Clinical Trial of Atromid-S in the Primary and Secondary Prevention of Heart Attacks and Deaths Due to Heart Disease

SURVEILLANCE

1. Subjects seen every three months
2. Clinical evaluation
3. Laboratory analyses
4. Continuing educational programs to maintain enthusiasm of all pertinent parties (subjects, local organizations)

COORDINATING CENTER

Statistical monitoring

OCCURRENCE OF HEART DISEASE

1. Clinical documentation
2. Laboratory analyses

OCCURRENCE OF DEATH

1. Post-mortem examination
2. Clinical summary

TABLE 4.—Fifth year of the proposed clinical trial of Atromid-S in the primary and secondary prevention of heart attacks and deaths due to heart disease

Analysis of findings:

1. Effectiveness of Atromid-S in prevention of heart disease.
2. Effectiveness of Atromid-S in prolongation of life.
3. Effectiveness of Atromid-S in prevention of second, third heart attacks.
4. Confirmation of risk factors in developing heart disease and in early death.
5. Evaluation of mechanisms involved in primary and secondary prevention.
6. Evaluation of techniques used in recruitment of subjects, in long-term treatment, in documentation of disease and death.

TABLE 5.—Budget for the proposed clinical trial of Atromid-S in the primary and secondary prevention of heart attacks and deaths due to heart disease

1st year: Development of trial; recruitment of 5,000 subjects-----	\$7,700,000
2d year: Recruitment of 11,000 subjects; surveillance; total number studied, 16,000-----	11,200,000
3d year: Surveillance; total number studied, 14,000-----	10,300,000
4th year: Surveillance; data analysis; total number studied, 13,000_	9,800,000
5th year: Surveillance; data analysis and report; total number studied, 11,700-----	9,600,000
Total-----	48,600,000

Studies of heart disease in human and animal populations have accumulated much of the necessary information important in understanding and studying this complex disease.

We now know how to organize a community to support research in heart disease. We know how to educate a population in order to secure their participation in such studies. We know how to organize the many scientific disciplines required into an efficient team. We know how to communicate effectively with investigators in order to accomplish the standardization of research methodology needed in spite of great variations in local environments. We know the needs of the patient and how to meet them in order to insure his cooperation and continuing presence in a clinical trial. We are better able to define the types of information to be obtained from the patient. We have more efficient methods of analyzing the information procured.

This specific body of knowledge is available because of the stimulus to research provided by the Federal government in all areas of science and particularly in heart disease, in cancer, in mental health, in education, and in space technology.

A reasonable next step is to put this available knowledge to use in a program specifically designed to accomplish the purposes justifying the money and effort previously expended and currently being expended. These purposes are: 1) to prevent the occurrence of heart attacks in men and women; and 2) to prolong the life and well-being of the patient surviving the initial heart attack.

In reviewing this accumulated information, there is undisputable evidence of the importance of high levels of "fats" in the blood. This abnormality has been demonstrated repeatedly. The relationship between this defect and blood clots also has been demonstrated.

The National Heart Institute is currently supporting a national study to investigate methods of treatment selected to alleviate the abnormality in the blood fat levels and, hence, to increase the length of survival in heart patients. This study, the Coronary Drug Project, is now starting its third year. Six treatments in the prevention of second and third heart attacks and the prolongation of life in men, age 30 to 64, surviving the first heart attack are being investigated in this study.

Since the inception of the Coronary Drug Project, one of the six treatments, Atromid-S, has received considerable study in the United Kingdom. This drug has been found to be relatively free of toxic side effects. Atromid-S effectively lowers the levels of the blood fats and may also interfere with the role played by the fats in developing blood clots. The effectiveness of Atromid-S in prolonging life presently is being investigated in clinical trials in the United Kingdom and in the Coronary Drug Project. Preliminary studies in the United Kingdom have found survival to be increased 30 to 40% with this drug.

These research findings suggest that Atromid-S should be intensively studied in preventing the occurrence of heart attacks in men and women, as well as in the prolongation of life in the patient with heart disease.

In order to study the effectiveness of this drug in primary and secondary prevention of heart attacks, we propose the following clinical trial:

1. Sixteen thousand individuals (8,000 men and 8,000 women) will be recruited nationally.
2. Four thousand men and four thousand women, free of heart disease, will be recruited in order to study primary prevention (prevent the initial heart attack).
3. Four thousand men and four thousand women with documented evidence of heart disease will be recruited in order to study secondary prevention (prevent second and third attacks and prolong life).
4. Men selected will range in age from 40 to 65. This is the age group at highest risk to this disease.
5. Women selected will range in age from 45 to 65. While heart disease typically has been considered to be a male disease, the occurrence of this disease in women increases with the onset of menopause. Hence there is a need to develop an effective treatment program in female patients as well as to evaluate Atromid-S in prevention of heart attacks in the post-menopausal woman.
6. The normal individuals will be carefully evaluated to determine their risk of developing heart disease. A number of studies have suggested that these risk factors are: (a) *abnormally high blood "fat" levels*; (b) *family history of heart disease*; (c) *body type*; (d) *lack of exercise*; (e) *cigarette smoking*; and (f) *emotional stress*.
7. The patients with heart disease will be carefully evaluated to determine the presence of factors affecting their survival. These factors are: (a) *congestive heart failure*; (b) *arrhythmia*; (c) *diabetes*; (d) *abnormal thyroid function*; (e) *number of previous heart attacks*; (f) *complications during the acute course of the heart attack, such as shock*; and (g) *the presence of other life-threatening diseases*. These factors are important singly and in combination.
8. The research design is illustrated in Table 1.

Four thousand normal men and women and four thousand men and women patients will be needed in the placebo group and in the Atromid-S group respectively. This design enables comparison of the effectiveness of Atromid-S, taking into account the normal subject's risk of acquiring the disease or the risk of early death in the patient with heart disease. One thousand individuals in each category is the minimum number required. It is possible to keep the size of the trial this small by making use of new techniques of analysis which enable the investigator to evaluate the simultaneous effects of risk or prognostic factors on the outcome.

The programs and organization of the clinical trial are shown in Tables 2 to 4. These activities are of the utmost importance in order to accomplish the goals of the research, namely, the prevention of heart attacks and death.

Steering committee

It is necessary to select a group of scientists knowledgeable in clinical trial research and heart disease to provide leadership. This steering committee is responsible for the scientific and administrative effectiveness of the trial.

Coordinating center

A coordinating center is necessary to insure the standardization and correctness of the research procedures used in the participating clinics. This center is responsible for the assignment of treatment, dispensation of drugs, and analysis of ensuing data. The analysis of data from these large population studies must be conducted by highly trained biostatisticians making use of modern high speed computers.

Central laboratory

A central laboratory is needed to measure chemicals in the blood and urine shown to be important in heart disease. These analyses should include determination of the blood "fats" such as cholesterol, of endocrine substances in the blood and urine, of specific enzymes, of blood clotting factors, and of trace metals such as potassium. These analyses will aid in understanding the mechanisms involved in the process and progress of heart disease in the normal person and in the patient.

Selection of investigators

Investigators from medical schools and large community health centers must be enlisted. These scientists are the key to the success of the clinical trial. They are responsible to their local community and to their patients for the conduct and results of the trial. Their efforts in maintaining the patient in the trial, in maintaining the standard research procedures, as well as insuring good medical care of the patient, provide the base on which the results must stand. The problems of local professional jealousy, fear of losing patients, fear of federal aid in medicine become less important when the local investigator is well respected and demonstrates that the clinical trial may be well integrated into the patient's total care under the supervision of his own physician.

Educational programs

Educational programs must be developed utilizing assistance from national and local associations. Both voluntary and governmental agency support must be secured in order to develop educational programs that will motivate normal subjects and patients to participate in the clinical trial.

Educational programs must be developed so that each investigator may best meet the needs of his participating group. These programs help to insure the long-term participation and cooperation of the subjects, the private physicians, the local hospitals, and the local voluntary and governmental organizations.

Clinic facilities must be established and personnel trained in order to insure the high level of accuracy necessary in research. These training programs of clerical, laboratory, and medical personnel are of utmost importance in the success of the trial.

Screening process

The screening of normal subjects and of patients must begin in the first year. This screening requires careful evaluation of each subject in order to insure that the so-called "normal individual" meets the established requirements for the classification—normal—and that the patient with heart disease meets the established requirements for the classification—heart disease.

Budget

The budget for the five years is given in Table 5. The monetary requirements during the first year are primarily associated with the developmental aspects of the trial. It has been our experience in the last ten years of clinical trial work that the education of the population and of the team must be carried out in all of its phases in order for the clinical trial to be successful. The budget for the first year has been calculated to be \$7,700,000, of which: (1) Coordinating Center

would receive \$3,200,000; (2) Central Laboratory would receive \$1,500,000; and (3) Clinics would receive \$3,000,000. These costs are derived at as follows:

1. *The coordinating center.*—This group must develop the programs designed to recruit and process the 16,000 subjects to be studied. The necessary facilities, staff, and equipment may be directly related to the ultimate goal of 16,000 subjects and is estimated to be \$200 per patient. This includes costs of preparing the protocol and the manual of operations; of preparing educational programs for the professional societies and for the local communities; of preparing for the analysis of data by high speed computers; of preparing and dispensing medications; and for training of personnel.

2. *The central laboratory.*—The laboratory must have equipment and personnel in order to develop the methods necessary to effectively process the large number of samples ultimately envisioned. In addition, the laboratory must prepare quickly as samples will be received for analysis toward the end of the first year as the clinics start their recruitment. It is estimated that the laboratory may process up to 5,000 specimens in this first year. These first specimens must bear the developmental costs and are estimated at \$300 per specimen.

3. *The cooperating clinics.*—Screening of subjects is costly, in that each individual must be carefully evaluated to insure the correctness of the classification of normality or heart disease. This evaluation frequently requires several thorough examinations. Records must be secured from private physicians and from hospitals. Communication between the clinic and the coordinating center must be established. Control procedures to insure accuracy of clinical measurements must be developed. These costs, when related to the patient and normal subject load expected the first year, are higher than in later years because many of the normal subjects and patients screened will be found to be unsuitable for the trial. If approximately 5,000 patients are recruited during the first year, it is estimated that the cost per patient will be \$600.

The budget requirements for the second, third, fourth, and fifth years of the trial will tend to be stable in spite of reductions (due to death or withdrawal) in the number of patients treated. This stability of financial support is necessary in order to carry out the procedures necessary to maintain the patients in clinic. As time progresses, patients attempt to withdraw, particularly if they are feeling well and no longer feel the need for close supervision. This problem will be especially acute in the normal subjects.

The coordinating center and the clinics must plan for this possibility and combat it using a variety of established, workable techniques. Thus, the examination and treatment of the subjects; the identification and documentation of new non-fatal heart attacks; and the identification and documentation of deaths require an annual cost of \$400 per patient. The budget for the clinics during the second year will total \$6,400,000.

The laboratory costs reflect the requirement of four specimens per year per patient. The minimum costs for the determinations to be made would be \$200 per patient annually. The total cost of the laboratory during the second year will be \$3,200,000.

The coordinating center, during the second year, will be involved in allocation of treatments, dispensing of medications, and statistical monitoring of clinical and laboratory data. With the necessary highly trained personnel and a well-designed computer system, this cost will be approximately \$100 per patient, or \$1,600,000.

The proportion of patients and normal subjects withdrawing from clinic because of deaths and other reasons each follow-up year should not exceed 10%. Previous clinical trials have observed a death rate in carefully treated patients with heart disease of 5% per year and a withdrawal rate of 5%. Hence, the number of patients and normal subjects eligible for supervision during the third year should be 14,400. During the fourth year the number of patients and normal subjects to be treated would be 13,000 and in the fifth year approximately 11,700.

The clinic and laboratory costs reflect this decline in the number of subjects. The coordinating center, however, will begin intensive analysis of the collected data during the fourth and fifth year and will be responsible for preparation of the findings during the fifth year. The additional work load will increase the budget by \$400,000 (fourth year) and by an additional \$500,000 the fifth year.

In summary, the budget for the first year (\$7,700,000) is to allow development of the program. The second year requires a maximum budget of \$11,200,000. The

required funds decline moderately in years three, four, and five (\$10,300,000; \$9,800,000 and \$9,600,000 respectively). The total budget required to carry out this necessary next clinical trial that may be instrumental in removing heart disease as a public health problem is \$48,600,000.

BUDGET ANNUALIZATION

Dr. WEINER. All right, sir.

The budget for the first year, as I have indicated in this prepared statement, is \$7.7 million, and this is to essentially allow development of the program. I would like to emphasize that we can begin recruiting at the end of this first year and I have indicated that we should get something like 5,000 people.

The second year requires the most money of this project—\$11.2 million. That is because we are dealing with essentially all 16,000 people. We will have completed recruitment by that time. The required funds decline moderately in years 3, 4, and 5.

In year 3, \$10.3 million; in year 4, \$9.8 million; and in year 5, \$9.6 million. The total budget necessary to carry out this necessary next clinical trial that may be instrumental in removing heart disease as a public health problem is \$48.6 million.

I would certainly like to thank you for allowing me to come and present these ideas to you, sir.

DIETS IN JAPAN AND UNITED STATES

Senator HILL. Let me ask this question: You all have spoken about the death rate in Japan being so much lower than here; is that right?

Dr. KRASNO. Yes, sir.

Senator HILL. Now, why is it we get so much more fat than they do? What is it? Where do all of these fats come from?

Dr. KRASNO. Our diet.

Dr. WILBER. We eat more meat.

Senator HILL. I understand that, but what type? You had the intestinal fortitude to mention cigarettes. I congratulate you, sir. From what phase of our diet do we get most of these fats?

Dr. KRASNO. Saturated fats, sir, the source of which is meat, high-quality meat.

Senator HILL. Breakfast bacon?

Dr. KRASNO. Bacon, eggs, milk, cheese. We literally live off the fat of the land, sir.

Senator HILL. And the Japanese are wise enough not to do this? What do they eat for breakfast every morning?

Dr. WILBER. Fish, lots more fish.

Dr. KRASNO. Fish, which is very low in cholesterol.

Senator HILL. You see, the average American thinks in terms of his breakfast eggs and bacon and certainly, perhaps, some milk.

Dr. KRASNO. Yes. It wouldn't be too bad—

Senator HILL. If he doesn't drink a glass of milk, he at least puts cream in the coffee.

Dr. KRASNO. He doesn't walk it off, either.

Dr. DEBAKEY. Mr. Chairman, what we need is a little more of the fat of the land in the budget for our Heart Institute.

COLLEGE STUDENT STUDY

Senator HILL. I understand. You wanted to add something, Doctor?

Dr. WEINER. I wanted to add we have just finished recently a study of college students 18 to 22 years old, males, and we found that about 90 percent of them were physically unfit. They couldn't ride a bicycle the equivalent of a mile; their diet was very high in these fats; they tended to be heavy smokers; we had no trouble recruiting 200 such smokers from the college population of this age group. All in all, we have quite an educational program still to do in this younger group if we are going to wind up with good, healthy people in the age group we are proposing to study now.

Senator HILL. As you know, today you can hardly turn on a TV program—I don't look at many of them, but I never turn on one that you don't see a cigarette advertisement. "Rather fight than switch." Is that right?

Dr. WILBER. Right.

Senator HILL. I notice none of you gentlemen are smoking this morning. I congratulate you.

Dr. DE BAKEY. If we had a small percentage of the amount they spend for that in our Heart Institute, we would be helped greatly.

Senator HILL. I appreciate that fact.

STATEMENT OF DR. WILBER

PREPARED STATEMENT

Dr. DE BAKEY. Dr. Wilber is our next witness.

Senator HILL. All right, Doctor.

Dr. WILBER. I would like to submit a complete statement and briefly summarize it.

Senator HILL. We will have that appear in the record.

(The statement follows:)

NEED FOR COMMUNITY APPROACH IN THE CONTROL OF HIGH BLOOD PRESSURE

High blood pressure, or hypertension, is probably the most common disease diagnosed by the practicing physician. It was the reason for more than 33 million visits to the physicians' offices in the United States in 1964. It accounts directly for 5% of all deaths in the United States and contributes substantially to the cause of death in another 13%, by the role it places in accelerating death from stroke and heart disease.

The National Health Survey found an estimated 17 million adults in the United States to have definite high blood pressure and an additional 16 million to have borderline high blood pressure. The Framingham and other community studies clearly indicate that high blood pressure is a major factor in increasing the risk of heart attack and stroke. The suffering and economic loss from these common major illnesses are enormous and cannot be accurately estimated.

Prior to 1950 we had no effective treatment for high blood pressure. Now we have many effective drugs to lower the blood pressure safely and comfortably. Probably as a result of drug treatment, the death rate from high blood pressure has declined: one of the few major causes of death that has declined in rate rather than increased.

Public health measures have made great conquests in the field of infectious diseases such as typhoid, malaria, smallpox, and polio. Now public health is turning to the great killers of today, heart and blood vessel diseases. Now is the time to bring our new knowledge about high blood pressure to the general population. The tools have been discovered and tested, and we must now make available modern treatment to the entire community.

Let me tell you of a pilot study in Georgia illustrating the present status and suggesting possible methods of reaching the people.

In 1963, the Georgia State Health Department with a grant from the Community Health Service and with the direction of the Heart Disease Control Program of the National Center for Chronic Disease Control, began such a pilot study consisting of a case finding door to door survey followed by a home treatment program in cooperation with the local private physicians.

The results of the community-wide survey of a randomly selected population of Baldwin County, Georgia showed that there is significant need for case-finding, treatment, and follow-up programs in the field of hypertension. The study revealed that 13.4% of the population in the 15 to 65 age group have high blood pressure. Of these, 41% were unaware of the elevated blood pressure. Only 30% (18% of the total hypertension group) of those who knew of their condition were under treatment. The major reasons given for discontinuing treatment were: 1) 16% could not afford to purchase the medicine, and 2) 58% said they were not aware of the necessity for continuing treatment. Only 32% returned to the physician regularly for follow-up.

The door to door household survey by itself increased the percentage of those under hypertensive treatment from 25% to 50%. The home follow-up program with monthly visits by a public health nurse under the direction of the private physicians, increased the percentage of those under treatment from 25% to 86%, and 80% of these achieved normal average blood pressure levels on medications. It was concluded that in this sample of the population studied casefinding surveys and home follow-up visits were effective methods to improve blood pressure control.

OBJECTIVE

This proposal has as its goal to measure the decrease in suffering and death achieved by controlling the high blood pressure in at least four selected communities in different areas of the United States. Urban and rural communities as well as mixed racial communities should be chosen. To accomplish this, efforts will be directed toward: 1) casefinding, 2) furnishing assistance to physicians in patient follow-up, and 3) providing free or low cost medication for those patients who are unable to pay.

METHODS OF ACHIEVING OBJECTIVES

A forerunner of and companion to all other activities will be a broad program of health education designed to assure a well-prepared and motivated community. This program should reach every segment of the community and enlist the support of every resident. A continuous educational campaign will accomplish: 1) community organization through frequent contact with health and civic groups, mobilization of manpower, and coordination of local activities; 2) public information through effective utilization of the news media, forums and group discussions, and through personal contact by members of the community health team; and 3) professional education through training programs, courses of instruction, etc.

At the present time the survey is the most productive casefinding method, but other methods would be tried. Population surveys will be conducted to identify unknown cases and define the hypertensive subjects in each community. All persons found to have high blood pressure in the survey will be re-examined in a secondary screening program. Those identified as positive in the second examination will be referred either to a private physician or to a clinic for treatment.

Clinics and private physicians will be offered assistance in following their patients. A trained paramedical staff will be available to visit patients in their homes to measure blood pressures, answer questions about hypertension, and explain the necessity for continuing treatment. The paramedical personnel would also locate lost patients and encourage them to return to therapy. A full report of each visit including the patient's complaints or questions would be promptly forwarded to the private physician or clinic.

From our previous study, an estimated one-third of the subjects whose high blood pressure should be controlled by drug therapy will be unable to purchase their medicine privately. So that these patients may receive proper treatment, they will be furnished drugs free of charge through this program upon proper certification.

EVALUATION OF RESULTS

The results of the proposed program could be measured in several different ways: 1) the decrease in deaths from hypertension and related disorders, 2) the decrease in hospital admissions for stroke, heart failure and heart attack related to high blood pressure, 3) the increase in life expectancy and working days, and 4) the decrease in economic loss as measured by health insurance, disability claims and rehabilitation referrals. There is no way to measure the expected decrease in grief and emotional stress of families and individuals.

Studies from large clinics on patients treated and followed for 7 years have shown that heart failure can be reduced by $\frac{1}{5}$, strokes reduced by $\frac{1}{2}$ and heart attacks by $\frac{1}{4}$. Most of these patients were over age 50 and the treatment of their high blood pressure was begun late. It is very possible that early treatment at younger ages may reduce these disastrous complications of high blood pressure to even lower levels. It may well take 10 to 15 years, however, to demonstrate these long term effects.

It is estimated that the economic loss from heart disease in the United States during 1962 amounted to approximately 22.4 billion dollars. The loss from strokes is unknown but must be very large. We can conservatively estimate that high blood pressure control in a national scale would reduce this economic loss from heart disease by $\frac{1}{5}$ —or $4\frac{1}{2}$ billion dollars per year.

STAFF NEEDS

The training of paramedical manpower could be considered a secondary objective of this program. Because of the tremendous shortage of professional health personnel, non-professional persons will be recruited from within the community and trained to carry out the survey and follow-up activities.

ESTIMATED COST OF PROPOSED PROGRAM

The average cost of a home visit is approximately \$3.00 per visit. The cost of blood pressure medication is approximately 20 cents per day per patient. In four communities of 50,000 each, such a program as described would cost \$500,000 the first year for organization, training of personnel and casefinding, and one million dollars each succeeding year for follow-up treatment. The savings in manpower, decreased hospitalization and medical care might be 12 million dollars per year eventually.

In my opinion, it is essential that this program be organized, programmed and evaluated on a national level. It is equally essential that the local medical community and health departments plan the technique of approach for their particular area. It will require close communication and cooperation on both levels.

It is urged that careful consideration be given to the possibility of specifically directing that funds be marked for this type of program.

We know what can be done for high blood pressure. Some well informed conscientious patients are now receiving modern treatment. Let us make it more widely available for all.

HIGH BLOOD PRESSURE

Dr. WILBER. I would like to tell you what I do—

Senator HILL. Were you born and raised in Georgia?

Dr. WILBER. No; I was born in Massachusetts, but I married a girl from Georgia.

Senator HILL. I understand. Did you go to Harvard?

Dr. WILBER. Yes, sir.

Senator HILL. Fine.

Dr. WILBER. I spent an hour a day teaching Emory medical students in Atlanta, usually about high blood pressure. I work 2 or 3 hours a day—I am head of the heart disease control in the State health department and we spend a lot of time on high blood pressure, since it is a major health problem in Georgia and elsewhere. And then I practice 5 to 7 hours a day, and I see a lot of patients with high blood pressure.

HEART DISEASE PRODUCING FACTOR

I hate to bring up at this late time another topic, but it is related—high blood pressure is related to what all the previous gentlemen have spoken about.

As you well know from the Framingham studies that we have determined that among our risk factors that produce heart disease and strokes—smoking, lack of exercise, high-fat diet, high blood pressure, and perhaps your family background—there are others, but those are the major ones.

SYMPTOMATIC FACTOR AND TREATMENT

In my practice I try to treat high blood pressure and I discovered on people who come in for routine exams frequently, so this points out that it is a symptomatic—many people are unaware they have high blood pressure.

ARTERIOSCLEROSIS ACCELERATION

I put them on treatment. We have good treatment now where we know we can lower the blood pressure, but unfortunately about half of them I never see again and I don't know if they continue to take the medicine or not, or I see them years later perhaps with an enlarged heart with this constant pounding, which they are unaware of causing acceleration of arteriosclerosis, which is the major problem we are all talking about. Or they have a coronary at 45 or a stroke.

HYPERTENSIVE HEART CONTROL PROGRAM

In our heart disease program we obtained some funds in 1963, if I may show you these charts to see what is being done. These are funds from the hypertensive heart control program here and we studied a typical community in middle Georgia, Baldwin County. This is a good, average community. It is not a deprived area. We made a door-to-door survey; we found 13.4 percent of the population had high blood pressure. Of these, 41 percent were completely unaware of it. They didn't know it; they had not been to a doctor or he hadn't told them.

Of those that knew they had high blood pressure, had been told, this group here, only 30 percent of them were doing anything about it, were on any treatment at that time.

And of those that were on treatment here, this red section, 14 percent or about half of those that were on treatment had normal levels of blood pressure when we checked them. About half of them that were taking pills, it wasn't working quite as well as it should have worked.

We asked the doctors in the town to let us go through their records. And we found records on 630 of our individuals and the doctors had diagnosed high blood pressure in 28 percent, in the 3 years prior to our survey, and had started 81 percent of them on treatment.

So the doctors were finding it in about half of the patients that we thought they should have; but if they did find it, they were treating it. But more important, even that the doctors started in treatment, like

in my own practice, they lost the great majority of them and only 34 percent of them ever came back for treatment again.

PATIENT FINDING AND CARE

So we felt there were two problems: One, finding the people with high blood pressure; and, two, keeping them under care.

So we started a little home program and we think demonstrated that just going out and finding the people would help. In 25 percent of the population of the hypertensives were on treatment when we started out, but just our survey alone increased this to 50 percent.

The green areas had good control and the yellow areas were just fair control. But then by having a nurse go by the home and help the doctor, work with him and check the pressure and see if they were taking their medicines once a month or once every 2 months, we could improve this to 86 percent on treatment, of whom 80 percent had nice low levels.

So, believe me, with the simple measures of casefinding, going out and finding the people and helping the private physicians take care of these people, we could get good control of the blood pressure in this small community.

SUGGESTED COUNTRYWIDE PATIENT FINDING AND CARE PROGRAM

So what I am proposing is that we now, in this committee, demonstrate for the rest of the country that this can be done on a larger scale, that we can control the blood pressure in a community and by helping the private physicians and by casefinding, and I think that we can reduce strokes by 50 percent. This has been demonstrated in studies and surveys of people.

We can cut myocardial infarctions perhaps by a quarter and a half. It has never been done in a young age group.

The costs are not excessive. In the last page of my report we could evaluate this study by noting the decrease in deaths from hypertension, the decrease in hospital admissions for stroke and heart failure and heart attack, the increase in life expectancy and working days, and a decrease in economic loss as measured by health insurance disability claims and so forth.

PROGRAM COST

We have estimated that to take four communities throughout the country, 50,000 people, and demonstrate, convince the people that they should support this as they have done in mental health disease, would cost about \$1 million a year to demonstrate in 200,000 people in four communities, that early treatment of high blood pressure can be very effective.

As it is a small proportion of the population, the private patients who are conscientious are doing this, but I think now that public health efforts should be made for the whole community.

That's all. Thank you, Mr. Chairman.

Senator HILL. You know our friend Bo Jones there?

Dr. WILBER. Yes.

Senator HILL. He had a cardiac condition, I understand, a short time ago?

Dr. WILBER. Yes, that's true.

Senator HILL. How is he now?

Dr. WILBER. Doing fine, getting good care.

HIGH BLOOD PRESSURE NATIONAL MAGNITUDE

Dr. DE BAKEY. I saw him not long ago, Mr. Chairman. He is doing fine.

This is really a very important area. Dr. Wilber has not indicated the magnitude of this problem in our country.

Dr. Wilber, could you just give a round figure of the number of people in the United States who are estimated to suffer from high blood pressure?

Dr. WILBER. There are 18 million definite and another 17 million adults who have borderline, probably will develop it.

Dr. DE BAKEY. What is important, this occurs across the whole range of the whole group. I have a patient in the hospital I operated on just recently, who 2 years ago was suffering from such high blood pressure that her heart was in failure.

About one out of every five patients I see have something from high blood pressure. Yet, here is an area in which tremendous progress has been made and a great gain in the decline of the death rate, 44 percent, the largest area.

CONTROL POTENTIAL

So the control of blood pressure is something we know something about and can apply. It is a beautiful illustration, it seems to me, of what can be done if we utilize to the fullest extent the knowledge we already have.

It is one of the major points made by the President's Commission and particularly about the recommendations made on the regional national medical program, Mr. Chairman.

In summarizing this whole thing, let me say I think you have heard just a few witnesses here today indicate what progress can be made in this area if you give it proper support.

LOW BLOOD PRESSURE: GOOD HEALTH

Senator HILL. Let me ask you this, Doctor, speaking about high blood pressure, what's the effect of low blood pressure now?

Dr. WILBER. In general, low blood pressure is a sign of good health and the insurance companies and the medical professions agree that the lower your blood pressure is and you feel well, the longer you are going to live.

Dr. DE BAKEY. So long as you are not in shock.

Senator HILL. You don't have to worry about the low.

You all have certainly brought us some most informative, and I would say challenging, testimony.

Dr. DE BAKEY. We certainly want to express our gratitude to you.

Senator HILL. This young man even had the intestinal fortitude to talk about cigarettes.

Dr. DE BAKEY. I think we can all talk about cigarettes, eliminating them would be a wonderful thing, if we could take the money spent on it and use it for good purposes.

Senator HILL. Use it for the things you are talking about.

Dr. DE BAKEY. What a wonderful thing.

Dr. WILBER. We know how to treat high-blood pressure, but we don't know how to stop people from smoking.

Senator HILL. I will tell you, you brought us some wonderful testimony. I want to thank each and every one of you.

Thank you very, very much.

SUBCOMMITTEE RECESS

The subcommittee will be in recess until 2 p.m.

(Whereupon, at 12:25 p.m. the subcommittee was recessed, to reconvene at 2 p.m. on the same day.)

(AFTERNOON SESSION, 2 O'CLOCK, TUESDAY, JUNE 6, 1967)

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

NONDEPARTMENTAL WITNESSES CANCER PROGRAMS

STATEMENT OF DR. SIDNEY FARBER, PROFESSOR OF PATHOLOGY, HARVARD MEDICAL SCHOOL, AND DIRECTOR OF RESEARCH, THE CHILDREN'S CANCER RESEARCH FOUNDATION, BOSTON

APPEARANCE AT REQUEST OF AMERICAN CANCER SOCIETY

Senator HILL. The meeting will come to order.

Dr. Farber, we will be happy to have you proceed—you and Dr. Clark—just as you see fit.

Dr. FARBER. Mr. Chairman, it is a great privilege to appear before you and with my colleague, Dr. Clark, the director and Surgeon in Chief of the M. D. Anderson Hospital, in Houston.

May I say, first that I appear at the request of the American Cancer Society Board of Directors to present the citizens' budget for fiscal 1968, to be spent in and through the National Cancer Institute.

In addition, I appear as a private citizen, sir, in my own behalf as a man working in the field of cancer and knowledgeable concerning the work which is going on throughout this country and many parts of the world.

The American Cancer Society took an interest in the work of the National Cancer Institute since their beginning at the end of World War II, and takes great pride in what you and the Congress have recommended and made possible each year in the appropriation of funds for the support of cancer research throughout the entire country, for building of facilities to make cancer research possible, and the provision of funds for the training of young people.

FUNDS RAISED BY AMERICAN CANCER SOCIETY

The American Cancer Society this past year raised about \$50 million. Ever since the great growth of the National Institutes of Health programs, brought about through the appropriation of your committee and that of the House and the whole Congress, the American Cancer Society has raised more and more money each year from the people of the country in voluntary contributions. Their role is concerned with helping private institutions remain private so that they will be in a position to take advantage of the great opportunities afforded through the Federal Government in the moneys appropriated through the National Cancer Institute.

This is a wonderful partnership.

Senator HILL. It is, indeed. That is a fine statement you have made, Doctor.

PROGRAMS OF NATIONAL INSTITUTES OF HEALTH

Dr. FARBER. May I say a word of introduction about the programs of the National Institutes of Health as a whole, because quite obviously, Mr. Chairman, as you have pointed out many times, we cannot separate one categorical program from all others. They are all interdependent, and they are dependent, too, upon the splendid programs in the National Institute of General Medical Sciences and the National Foundation.

HEALTH RESEARCH FACILITIES

There are two points I would like to make concerning the NIH as a whole. If we are to help the medical schools which are to be founded in the next 10 years and which we need so badly, not only for the care of the people of the country, but to carry out the research to do away with these dread diseases, these medical schools require more in health research facilities, construction support, which you have been so instrumental in providing year after year. This year the need is very clearly \$100 million. This has been brought out in testimony in the last few years, and has been well documented.

The amount of money available in the President's budget, Mr. Chairman, \$50 million, is actually \$35 million, because \$15 million were requested last year and could not be spent. That has been carried over.

Senator HILL. They didn't use that \$15 million at all?

Dr. FARBER. They were not permitted to use that money. So we have a great deficit for research and construction of all kinds for the country as a whole.

CLINICAL RESEARCH CENTERS

Second, there is one particular program I would like to mention. It seems far away from cancer, but it is extremely important for cancer and all the other dread diseases. These are the general clinical research centers, which have meant so much to the medical schools of the country. These represented the first time that clinical research facilities of a sophisticated nature were made available to the country as a whole. Such facilities had been restricted to a few places in the country such as the Rockefeller Institute Hospital.

This has been a wonderful program. This year they have need of \$40 million, made up of continuing grants and grants already approved by the Council, which advises in this field, and the appropriation is \$30.5 million.

This is obviously inadequate. This is an extremely valuable program if we are to turn out the clinical investigators we need in cancer as well as in all the rest of medical research.

PROBLEMS OF CANCER

Now, Mr. Chairman, may I turn to the problems of cancer?

This is an extraordinarily interesting year, because for the first time in perhaps 50 years, two Nobel prizes went to men in cancer research: to Dr. Charles Huggins, whom you know so well, who did splendid work in the control of cancer of the prostate by the use of sex hormones,

and to Dr. Peyton Rous, who received his Nobel Prize 50 years after his original discovery in viology and cancer. We are all so happy that he is vigorous and able to enjoy this great honor.

The reason that there have not been Nobel awards in the field of cancer for these many years are two: The first was that a mistake was once made, Mr. Chairman, by giving a Nobel Prize to a man who was thought to have found the cause of cancer, a parasite in the stomach. That was an unfortunate mistake on the part of the man and of the Committee.

The second was that a decision was made, that not until there was actual evidence substantiated for many years in this most difficult of all fields in medicine today—I have no hesitancy in saying that because of the breadth of the field—would they give a Nobel Prize, and we are very happy that Dr. Huggins and Dr. Rous were so honored.

BREAKTHROUGHS

The question is always asked whether there has been progress that is discernible from last year until this year. This is difficult to answer in any case in any field unless there is a breakthrough of such clear-cut importance that there is no question about evaluation of that breakthrough.

But there have been many breakthroughs. We look at this, as you do, sir, from testimony given before you for the last, more than 20 years now, as a picture which has changed almost from night to day in the knowledge that is available to workers in the field of cancer research today.

It is difficult even for such men as Dr. Clark and myself who have been in cancer research for our professional lives to realize that we are talking a totally different language today, that we have such valuable tools and information which have come to us from the fields of science basic to cancer research and from investigators in all fields of cancer research today.

There is a degree of sophistication and knowledge which we would have been glad to have 20 years ago, and we rejoice in the fact that such tools and information are available to us today.

There have been great gains in our knowledge of the biology and chemistry of the cell, and the molecular structure changes in the transformation of the normal cell to the cancer cell.

In the field of virology, we are talking today in specific terms. We have reached a point where the work in virology of cancer has been able to pay back to the field of general virology some of the great contributions which general virology made to cancer, because of the many important discoveries made by people studying cancer and viruses.

This is also true in the field of hormones, and endocrinology.

The great fields of progress are chemotherapy, the program for which was instituted here by a Senate appropriation, about 15 years ago. With that beginning, a tremendous amount of progress has been made against many kinds of cancer.

The cancer which was studied first and most intensively with the aid of chemicals was acute leukemia. In the field of acute leukemia, there

is only one mention that I would like to make, and that is even though the cure has not yet been found, and what we have accomplished may be now measured in terms of months and years up to 15 years compared to a few months, just 20 years ago. There is an attack in the field of leukemia of a magnitude and sophistication such as has never been achieved in the field of cancer research before.

If you had been able to be with us 3 weeks ago in a 3-day conference on leukemia, and Burkitt's tumor, of 50 people sponsored by the National Cancer Institute and American Cancer Society, you would have been able to hear of progress that would have been heartwarming, indeed.

BURKITT'S TUMOR

It is interesting that there is a tumor, the Burkitt's tumor, in central Africa, which is a first cousin to leukemia. The children who have this tumor may have tumor masses involving the bones of the head, which can reach the size as big as a soccer football.

The eyes may be destroyed by the tumor, there may be involvement of other parts of the body, such as the ovaries and testicles, and so on.

This was seen first in Negro children in that part of the world. We are now finding that tumor in many other countries, including the United States, and some of these end up with acute leukemia.

What is remarkable here is that what we have learned in our acute leukemia program in this country was applied in the shape of chemicals to the children in central Africa. They have no X-ray machines in that vast portion of the world, so that they had to rely on chemicals. What has happened now, with the chemicals discovered here in our leukemia program, is what they are now calling cures, a little prematurely perhaps, but the change is so striking since these huge tumor masses have disappeared under chemotherapy. Children have reached a state indistinguishable from normal for as long as 4 years.

And what they are learning in Africa, we are now applying back to our own children with acute leukemia.

Mr. Chairman, this is a beautiful example of casting bread upon the waters and getting back buttered toast.

At this conference, which was attended by 50 people from many countries, you would have been pleased, indeed, to see the exchange of information, the stimulation of one group by another, and the sharing of materials for research by men from many different countries.

This is true internationalism in research which you have preached and supported all the years that I have known you, Mr. Chairman.

We may mention the great gains in survival in patients with cancer of the uterus. They were not brought about by chemotherapy. That was the consequence of finding a simple diagnostic test and acting upon it.

There has been a great reduction in deaths, but even today so many deaths occur —

Senator HILL. We don't use it as we should.

Dr. FARBER. It is not used, as you say, Mr. Chairman.

CHANGES IN CURE RATE

Chemotherapy alone or with radiotherapy has produced cures in previously incurable forms of cancer. In choriocarcinoma of the uterus, the retinoblastoma which causes blindness, and the Wilms tumor of the kidneys. There have been other forms of cancer which have responded, not in such a dramatic manner, or permanent manner, as in those that I have mentioned. If one looks over any of the great cancer institutes or programs of clinical cancer care and research in the country, we find what was incurable a few years ago is beginning to be curable in 5 percent, 10 percent, 30 percent of the cases, or we are beginning to see long prolongations of life, during which time the patient is alive to take advantage of the next forward step whenever it may come.

The tumors of the skin, in particular, concerning which I said just a word last year, will be discussed with you tomorrow morning with one of my former colleagues, Dr. Klein.

Senator HILL. Yes.

Dr. FARBER. He has produced, as you will see from the illustrations tomorrow, a great advance in the treatment of patients with cancer in recent years.

The tumors of the testes, the most common form of cancer in the male from 29 to 34, is beginning to be treatable in advanced cases with prolongation of life, but not with cure, with chemicals of several different kinds, which were first discovered for leukemia, and are now being applied here.

These are advanced cases of the testes I am talking about, because cures have been obtained when the tumor was discovered early, by surgery alone, or by surgery and radiotherapy in the past.

CITIZENS' BUDGET

The needs that we have, Mr. Chairman, I am going to mention in just a moment, but feel constrained to say a word of explanation for the citizens' budget, which is before you.

The citizens' budget was brought together after careful study of the needs of the country as a whole. It was passed upon by a group of citizens who met as private citizens but they were all members of the National Advisory Cancer Council. That increase to \$300 million from \$183 million was a figure first passed by this group.

It was then subjected to scrutiny by the American Cancer Society staff, and then a special committee of the American Cancer Society, and finally the board of directors of that society, which gave unanimous approval to this figure.

Now we come here at your invitation and through your courtesy, Mr. Chairman, to give expert opinion about cancer, and only cancer at this moment. We are not wild-eyed people without awareness of the rest of the world around us. We know that at this moment and in this year the Congress of the United States and the President have before them grave decisions concerning priorities. If there were peace today—if there were not these extraordinary demands upon our economy, the people in the country who are doing cancer research today in the institutions which have grown up largely with Federal support through this committee and that of the House, these people are ready to use

without waste and with great effectiveness, \$300 million in the support of research, the needs for which are immediately before us.

We look forward to the day, Mr. Chairman, and we hope it will be the day after tomorrow, when peace will be with us. At that time, may I assure you that the country will be ready to use the budget which the citizens of the country place before you today.

Senator HILL. You speak of that budget. I suppose you submitted it to the House committee?

Dr. FARBER. Yes.

Senator HILL. Did you submit it to the President?

Mr. FARBER. We submitted it to the President with a special letter with an explanation of the kind I have just given you, concerning the establishing of priorities which is in your hands and in his hands, so that both groups have been aware.

I want to return to the House committee in just a moment, sir, in view of what they have written.

Senator HILL. All right, sir.

HOUSE ACTION AND RECOMMENDATIONS

Dr. FARBER. The House, in their report, which I have before me, gave no increase over the President's budget, but they did make two recommendations. May I read, sir, the first?

Senator HILL. Surely.

Dr. FARBER (reading):

The Committee will expect the National Cancer Institute to give special emphasis to research aimed at identifying the agents responsible for cancer causation and development of techniques for the protection of workers against malignant diseases.

They have put their finger, of course, on one of the extremely important areas of cancer research in the country. In last year's testimony before you, Mr. Chairman, I submitted in great detail a statement on the needs of workers in the fields of carcinogenesis and the field of cancer, and I have not repeated this this year, but I would like to refer back to it.

There is no question that this is extremely important. If we continue to find cure after cure for cancer and if then at the same time we are causing more cancer than ever before, our work will be in vain.

The second point I would like to make in regard to the House statement is this: They mention techniques for the protection of workers against malignant diseases. They are quite correct that workers in industry are vulnerable to these agents, but may I say, sir, the problem is far greater than that. The problem is one of putting in danger more and more each day, every man, woman, and child in this country, because our external environment is being polluted to this extent.

The danger here may be very much greater than we feared, since it has been shown that agents which are not poisonous in themselves when combined together may be.

May I give you an example? There is an insecticide which is sold widely. It is in a can with a propellant, which is freon. If you take freon and put it into mice you produce no cancer. If you take the insecticide and put it into mice, there is no cancer, but if you take

freon and the insecticide, put the two together, you do get cancer in a high percentage of the mice.

This is a grave worry, and it is but one illustration of the tremendous hazards we have in this important field.

I appreciate the House recommendation. I regret only that there is no money recommended to go with that recommendation.

The second recommendation they make, that the committee recognizes the need for better geographical distribution of cancer institutes or centers, most of which are now located in the Northeastern region of the country. It recommends there be established centers in the other areas.

I am delighted to read this recommendation of the House, and I wish only——

Senator HILL. That they would put the money in it——

Dr. FARBER. Money with the statement to make it a reality.

RECOMMENDATION RE CANCER INSTITUTES

This brings me to the citizens' budget again. We have first a recommendation, as we have for a number of years, for the support and construction of cancer institutes or centers in at least 20 regions of the country.

I did not make myself sufficiently clear before the House on the point of how many cancer centers we have now. There are only three worthy of the name. One is in New York City, the Memorial—Sloan-Kettering Institute. There is a second in Boswell Park in Buffalo, where just 15 years ago or less there was a tiny institution not worthy of the name cancer institute in the modern sense, and then there is a third in Houston. This today is one of the truly great cancer institutes and hospitals in the world under the direction of Dr. Clark. This happened because, first, the State gave money, then private support came, but the final push has come with the assistance of the Federal Government, because the State could not do it all. By the Federal Government I mean these National Cancer Institute programs.

Senator HILL. Yes.

Dr. FARBER. There are smaller institutes in Philadelphia and Boston, including a specialized one for children. In the University of Wisconsin there are two that are separated, one for basic research and one for clinical work. There are a number of others, some 18 or 20 in the country that are ready to expand, but they cannot be called cancer institutes in the broadest sense of the term unless they get Federal assistance. As far as these three large ones are concerned, every one of them could expand to far greater effectiveness if they had additional support, which they have proved they deserve to have.

Here we have a record on which to go, and we speak not with words. We speak with actual deeds. And so one of our recommendations in the citizens' budget again this year, Mr. Chairman, is that if and when this money can be appropriated, the country is ready to have these 20 great cancer centers which will feed all the surrounding territories and will be well scattered throughout the entire country in accordance with the needs of the population.

ESTABLISHMENT OF MORE TASK FORCES

Included in our recommendations are a few items here which I would like to highlight in conclusion. The first concerns the establishment of more task forces which have received your approval, and require more funding if they are to become effective.

The only task force of the National Cancer Institute which has been truly funded has been the one for acute leukemia, and that has done such a splendid job with the aid of the citizens of the country who work with the National Cancer Institute, that it is quite clear we will make far greater progress if we follow this pattern with other kinds of cancer which are far more numerous than acute leukemia.

I am referring to the one on breast cancer, for which a task force has been established through your appropriation; 64,000 patients in 1967 with cancer of the breast, 27,000 deaths. We must make much more rapid progress there. This has not moved as fast as it must, and it cannot without greater support.

Cancer of the lung, with 50,000 deaths in 1967. The work here is so badly needed on this most rapidly increasing of all forms of cancer.

Colon-rectal cancer, 73,000 new cases this year, with 44,000 deaths, Mr. Chairman, and bladder and prostate cancer with its great toll, and tumors of the brain, much smaller in size, but a painful field because so little can be done for the malignant form of cancer, although the benign forms, the more slowly growing forms have been treated successfully by surgery.

We recommend \$2 million each for each of three of these new task forces in lung, in colon-rectum, and in the prostate-bladder, for a total of \$6 million, as a specific recommendation included in our overall one.

There are two other recommendations we would like to make.

CANCER CENTERS

In regard to the cancer centers, we believe that if a million dollars were invested this year to support the planning of these cancer centers, the country will be ready when you are ready to appropriate the money for this support.

Senator HILL. You could go forward then?

Dr. FARBER. Yes. We should be ready. We should have these blueprints on top of the table ready to go the moment that the air is a better one for the treatment of human beings by human beings in this country and the world.

CLINICAL TRAINING GRANTS

And the third is a matter of great importance, if we are to have people ready to man these Institutes. This is a recommendation of the \$2 million for the support of clinical training grants.

This is for the training of people—and Dr. Clark may have more to say on it. He is Chairman of that Committee of the National Cancer Institute.

Mr. Chairman, in closing, I want to say again how much gratitude we of the field of cancer, the American Cancer Society, have to you as a person, and to you and your colleagues on the committee for the great forward steps we have been able to make through your help.

Senator HILL. No one has been more helpful to this committee and done more to enlighten and inform this committee, or to inspire this committee, or challenge this committee to move forward, than you have, sir.

Dr. FARBER. Thank you very much, sir.

Senator HILL. We deeply appreciate all you have done, the tremendous amount that you have done.

LEUKEMIA

Let me ask you this, Doctor: I have here an article from Newsweek magazine, under the date of June 12. It is captioned "House of Cancer," and it speaks in terms of leukemia as a contagious disease.

What would be your comment?

Dr. FARBER. I am happy to have a chance to answer that question, sir. Leukemia is a disease without a known cause as far as man is concerned. We can cause it in a mouse by passing viruses from mouse leukemia to another mouse. We can cause it by using large quantities of female sex hormones, far greater than anything used on humans, or by Benzene. There are other causative agents in the laboratory, including energy such as radiation.

These cancer houses which you quoted and the contagious nature of leukemia are brought up from time to time. I want to give a general answer that leukemia is not a contagious disease in the sense that measles or whooping cough or chicken pox is.

Senator HILL. Or small pox?

Dr. FARBER. Or small pox, indeed, which you well remember.

And even if a virus is found to cause human leukemia, and that has not been proved yet, we will have to redefine the word, "virus," because the virus will act quite differently than those found in these so-called contagious diseases.

I think while this kind of search must go on under the expert guidance of our Communicable Disease Center in Atlanta, and through the National Cancer Institute, the mothers and the fathers of the country can take comfort in the fact that when the cause of leukemia is found, it will be found to be not a contagious disease.

Senator HILL. Not a contagious disease?

Dr. FARBER. It may be an infectious disease for the individual, but not contagious in the sense that it will spread from person to person.

Senator HILL. That would be your explanation of this article, then, Doctor?

Dr. FARBER. Yes, sir.

Senator HILL. I think I will put this article in the record at the conclusion of your testimony so anyone reading the record will have it.

PREPARED STATEMENTS

Incidentally, we must put your statement in full in the record, which we will do.

Dr. FARBER. With your permission, Mr. Chairman, may I have my statement put into the record?

Senator HILL. We will do that, Doctor.

(The statement follows:)

Mr. Chairman, and members of the committee, during the many years you have given me the privilege of talking about the needs of the country for cancer research, I have found myself looking forward to the next opportunity as soon as the last one was over. The explanation of this lies in the inspiration I have received from your Committee, through you Mr. Chairman, and from you as an individual because of your deep concern for the health of the people of the country, and your own enormous achievements in behalf of all people, including those suffering from cancer.

I appear before you as the official representative of the American Cancer Society and also in my own behalf as a private citizen. I am delighted once more to have as my colleague this year, Dr. R. Lee Clark, Director and Surgeon-In-Chief of the M. D. Anderson Hospital.

The Citizens' Budget we present to you today has had an interesting history. The needs of the country for cancer research to be carried out in and through the National Cancer Institute were studied since the day of our last appearance before you. At the end of September, they were discussed with members of the National Advisory Cancer Council, who met together as a group of citizens thoroughly familiar with the needs of scientists and doctors in the field of cancer in institutions throughout the country. Their recommendation was submitted to the American Cancer Society, first to the Legislative Committee, and then to the entire Board of Directors. We present today a Citizens' Budget which has the unanimous approval of the Board of Directors of the American Cancer Society, and include also a word of explanation which we presented in a letter to President Johnson on October 11, 1966, with a copy of the recommendation we are making here today . . . "we are aware of the numerous and difficult problems placed before you for decision, and we understand fully the necessity for the establishment of priorities". It is in this spirit, Mr. Chairman, that we respectfully submit to this Committee a recommendation for an appropriation, which we believe, on the basis of expert knowledge of the many people concerned in the formulation of this Citizens' Budget, represents the actual amount of money which the scientists and doctors of this country require and can use effectively and without waste. This is the amount required if we are to make the greatest progress in the solution of the many problems of cancer on the basis of present knowledge and the important gains of the past 20 years made possible by Federal funds appropriated by the Congress.

It is for this expert opinion of actual needs for the support of cancer research that you have invited us to appear before you today. We recognize first that under ordinary conditions this country has the resources to mount a program of this magnitude. We have understanding, too, that the extraordinary conditions which prevail make more difficult the appropriation of large increases in research funds for purposes that deal more with the good of the individual than emergency needs for what has been called the preservation of the Nation. Such painful choices belong to the Congress and to the President. It is our hope, Mr. Chairman and members of the Committee, that these extraordinary needs for our national resources will soon be no more. When that time comes, the funds so liberated can be put rapidly and effectively to use in the search for solutions to the problems of the dread diseases, including cancer. The tooling up processes which the Congress has made possible has borne fruit in many parts of the country where medical research was almost unknown before, and nowhere to the degree which is visible today. Two of the three largest and most effective Cancer Centers in the country did not exist 20 years ago, nor was there any evidence of the degree of scientific sophistication by men and women who have been attracted in such huge numbers where nothing of this kind flourished before. I refer to the

magnificent institutions of cancer in Houston, under the direction of Dr. R. Lee Clark, and in Buffalo, at Roswell Park Research Institute where Dr. George Moore has added Federal resources to the generous annual budget provided by the State of New York. This is also the case in Houston.

We submit this Citizens' budget with confidence that those responsible for administering these funds in the National Cancer Institute, and the National Institutes of Health, and the United States Public Health Service, with the help of the large number of expert citizen advisors who are called upon from all parts of the country to help in this great task, can use these funds wisely and effectively. The final justification for the realistic increase in the Citizens' budget for cancer lies in the realization of the magnitude of the problem of cancer, the enormity of suffering caused by this group of disorders, and the unhappy reality of the loss of more than 300,000 lives this year in the United States alone because of cancer.

CITIZENS' BUDGET, FISCAL 1968

The total Citizens' Budget recommendation amounts to \$300,000,000 or \$116,-644,000 above the President's Budget for F. 1968, \$183,356,000. This we have broken down into two parts, and we shall keep them separate for the sake of clarity.

Recommended increase above President's budget, part I.....¹ \$58, 644, 000

1. For exploiting research opportunities aimed at preventing cancer and treating it successfully through expanded support of basic and applied research carried out independently or in cooperate task forces through the National Cancer Institute in the universities, independent research institutes, industrial laboratories, and the National Cancer Institute itself, in continuation of the most effective methods responsible for research progress which have been developed in the past 20 years.

This additional support would make possible more rapid expansion in the application of the technology which has been developed in the space age to cancer research and treatment. It will provide increased support for the independent research worker who is developing his own program and for the large cooperative programs required in the fields of cancer causation (carcinogenesis and chemotherapy).

The full activities of capable scientists in biochemistry, molecular biology, cancer biology, virology, and immunology to permit pursuit of leads of importance already well known, should parallel a great development in research leading to the possibility of actual prevention of cancer by removing cancer-causing substances in our environment and by the perfection of vaccines if and when sufficient justification from experimental work is at hand.

The task force, so effectively worked out in the field of acute leukemia has made a beginning at the suggestion of this committee in the field of breast cancer, and now choriocarcinoma of the uterus. Plans for task forces against the forms of cancer which account for 95% of the deaths of the country, such as of the lung, the stomach and intestines, the prostate, the uterus and a number of others await only sufficient support.

2. Training grants²

Supported for increasing the training of scientists and doctors for cancer research and for the support of those highly trained scientists when they embark on their research careers will prove a valuable and essential investment.---

7, 000, 000

Total ----- 65, 644, 000

¹ Includes \$6,000,000 to set up task forces on cancer: 1—in the lung; 2—of the colon and rectum; 3—of the prostate and bladder.

² Includes \$2,000,000 for clinical cancer training grants.

PART II. CANCER RESEARCH CENTERS

1. There are only three really large centers of cancer research and clinical investigation in the United States, and these are not as complete as the talents of their staffs and leaders would permit. For many years we have recommended that in 20 sites distributed throughout the country institutions of this kind should be built and supported in amounts adequate for effective research programs. To supplement, create and support such cancer centers in 20 sites where task force groups can be established, or located as part of a national program of cooperation, the amount of \$41,000,000 is required-----¹ \$41, 000, 000
 2. Start of a construction program in these Cancer Research Centers, aimed at providing the research facilities needed at these sites of task force operations. These Centers will not be built in all parts of the country without construction funds. The need for these is so great as to justify this request for special consideration. Funds in fiscal 1968 would be mainly for planning and for temporary and permanent facility construction.----- 10, 000, 000
- | | |
|-------------|--------------|
| Total ----- | 51, 000, 000 |
|-------------|--------------|

¹ Includes \$1,000,000 for planning grants for these Centers.

Part I and Part II have been separated because the needs are of different nature, and we want to emphasize their differences and also their importance.

President's budget, fiscal 1968-----	\$183, 356, 000
Part I—Citizens' budget, fiscal 1968-----	65, 644, 000
Part II—Citizens' budget, fiscal 1968-----	51, 000, 000
Total -----	300, 000, 000

SOME ACHIEVEMENTS OF CANCER RESEARCH

Acute leukemia

Less than a month ago, a three-day symposium, sponsored by the National Cancer Institute and the American Cancer Society on acute leukemia and Burkitts tumor was held outside New York City. Leaders of research in this field, limited to 50 in number, came from Africa, several countries in Europe, and many parts of this country. For three days critical discussions were held of accomplishments of important directions of research and on promising leads for rapid exploitation. There have been great gains in the contributions of the sciences basic to acute leukemia research, mainly in the fields of chemotherapy, immunology, and virology. The causative agent is still without final identification. Hours of discussions were devoted to the presentation of data, particularly in immunology and virology which emanated from research findings that had not been made when the First Conference in this series was held just four years ago.

From many clinics reports came of long increase in survivals in acute leukemia. Studies on 157 children and adults reported where survival from 5 years to 15 years has been confirmed, in comparison to the survival of weeks to months just 19 years ago. There is still no cure for acute leukemia, a fact which I find I must emphasize constantly lest the long-term survival of a small number of patients give rise to premature enthusiasm. If this can be accomplished, however, for a small number, and if the survival of all patients has been greatly increased, there is justification for restrained optimism that the problem can and will be solved. Of great interest and encouragement was the discussion concerning the treatment of children with Burkitt's tumor, a lymphoma closely related to acute leukemia, which is found mainly in Central Africa. This was discovered just a few years ago. It was heartwarming to see doctors in Central Africa cooperating by furnishing research materials, such as blood serum, to scientists capable of carrying out extremely sophisticated studies in Stockholm, Paris, London and in laboratories in this country.

It is extraordinary that from a part of the world where resources for medical research and for medical care have been far too meager there has emerged knowledge that is of inestimable help in projecting us toward the solution of the problem of acute leukemia in this country. The converse is also of interest. Doctors in Central Africa adopting the forms of treatment we have used in this country for acute leukemia have accomplished impressive improvements in children with huge tumors of the jaw, or of the bones, or of the abdomen of the Burkitt lymphoma

type, with complete disappearance of any evidence of tumor for more than 4 years in many instances. Again, here, too, more enthusiastic doctors are beginning to use the word chemical cure of Burkitt's tumor. On the basis of these accomplishments I would prefer to wait many more years before employing that term. A situation, however, appears to occur here where the combination of chemotherapy and immunological alterations, characteristic of the children in that part of the world and/or of the tumor, combine to cause what appears to be complete disappearance of what must be regarded as a form of advanced cancer at the time treatment began.

CANCER CENTERS

Progress in cancer research can be made in many ways. Individual research projects carried out by one man in the ivory tower, or in any department in a medical school, hospital, or research institute by himself, must be supported if the project meets the approval of juries of the individual scientist's peers in the Study Sections and in the Cancer Council. Larger programs of cancer research with concentration in one discipline, or utilizing the techniques and knowledge of scientists and doctors in a number of disciplines can make rapid progress if properly organized and if appropriate research facilities are available.

TASK FORCES

We have discussed for a number of years the importance of the Task Force and have emphasized again the great achievements of the properly organized and funded Task Forces which bring together the knowledge, energy and activities of representatives of a number of institutions in the country in accordance with methods of work mutually agreed upon, either through the National Cancer Institute or in an approved institution outside of Bethesda. We can not over-emphasize the importance of the Task Force arrangement, and have once more called attention to this in the request for the Citizens' Budget.

Included in the Citizens' Budget recommendation is support for the Task Forces which I would like to specify more clearly at this point. Funds have been appropriated before for a Task Force on Breast Cancer in the amount of two million dollars. We should like to recommend the following amounts in support of Task Forces on:

1—Cancer of the lung-----	\$2,000,000
2—Cancer of the colon and rectum-----	2,000,000
3—Cancer of the prostate and bladder-----	2,000,000

What is needed in addition to all of these is the collection of a critical mass of scientists and doctors working in the many sciences basic to cancer research and in clinical investigation within a structure called a Cancer Center. Such a Center should be located preferably as an integral part of a great medical school so that the rich resources of a medical school, a university, and of scientists and doctors working in other disciplines, or on others of the many dread diseases, may be called upon to enrich the intellectual environment of the Cancer Center. In such Cancer Centers there should be not only basic research and clinical investigation, but also the home of the Task Forces which will bring together many institutions in the country through the National Cancer Institute. Such Centers, too, are the training ground for medical students in the field of cancer where the excitement of the field may be conveyed to the doctors and scientists of tomorrow whom we so badly need. They can be the site of continuing education, or demonstration to doctors in the community hospitals. Such communications should be a matter of 24 hour a day, 7 day a week character, and should be available to every doctor within a given part of the country, so that the expert knowledge in diagnosis and treatment up to the minute can be drawn upon in behalf of all patients.

It was the hope of those who had this conception, and for others of the dread diseases, as well as for cancer that such Centers could be established many years ago when citizens first made this proposal before this Committee, and particularly when the Senate Committee of consultants, appointed by you, Mr. Chairman, in 1959, made their recommendations to the Senate. When this suggestion was fed into the giant mill of the National Institutes of Health for processing they came out in the form of something called Clinical Research Centers, mainly of non-categorical type, with some for categorical purposes, greatly diminished in size, and in purpose because it was believed by those who had to administer the program that these were more needed by the medical schools of the country and

could be more easily fitted into the capabilities of the medical schools. I would like to make quite clear, Mr. Chairman and Gentlemen, that these Clinical Research Centers have been extremely valuable and have made important contributions to medicine, but I want to make equally clear that they never have been a substitute for the proposal we originally made.

I am happy that those medical schools and teaching hospitals of the country which have qualified have had for the first time in their history adequate facilities and support for the conduct of sophisticated clinical investigation. The returns on this investment have been great indeed. This, then, was a very valuable bi-product of a proposal that originally specified something far more inclusive.

The second attempt to create great Cancer Centers in at least 20 locations of the country, with smaller connecting units in a few hundred community hospitals, as well as to create similar Centers in the fields of heart disease and stroke, and later hopefully other dread diseases, was incorporated in the DeBakey report of the President's Commission on Heart Disease, Cancer and Stroke.

In the development of the Regional Medical Programs which represented the implementation of the action of the Congress to the recommendations of the President's Commission on Heart, Cancer and Stroke, the Cancer Centers as such were regarded as institutions which could be inserted into the Regional Medical Programs at the proper time. It is for this reason that I bring up once more the proposal for true Cancer Centers which should be supported, if possible, by new and meaningful relationships not only with a medical school and university, but also with the splendid community hospitals which exist in many parts of the country. You will remember, Mr. Chairman, that you are responsible with Mr. Burton for the building of more than 8,000 community hospitals in this country, made possible by participation of the Federal Government in their cost or improvement. We must not forget that thousands of well-trained graduates of our medical schools and teaching hospitals spend their lives in these community hospitals, and are capable of professional activity of the highest standard of excellence. It is obvious that not all patients in a given part of the community can, or should be cared for in the 20 Cancer Centers we recommend. The more than 200 community hospitals of real strength where teaching programs do exist, or can be created, and where clinical investigation can be established in either independently or as part of the great investigation of the Task Force system in the cancer hospitals, can add enormous strength to cancer research, while procuring for their patients all the information that medicine, surgery and laboratory science can contribute at any given moment because of their close communication with a Cancer Center.

This is based in turn not only upon the research work in the Cancer Center, but also upon new and greatly perfected systems of communication that can be set up between and among all of these Cancer Centers and the National Cancer Institute itself. If the medical schools can join with such Cancer Centers they will have the opportunity for making the greatest possible contribution to the health of all people. If there are medical schools which believe their resources in manpower are too weak, or their goals lie in different directions, the Cancer Centers will have the leadership and strength to do this by themselves.

It should be made quite clear at this point, that this proposal in no way interferes with the development of what is now called the Regional Medical Program. If that is their wish then our recommendation here is that through the National Cancer Institute, Cancer Centers in at least 20 locations in the country be set up with provision for support in the community hospitals which will work in close cooperation with the Centers. This network then can be inserted into any one of the regional programs where there is a need for such cancer expertise and facilities. Ways of harmonious cooperation will be found.

This long explanation, Mr. Chairman and Members of the Committee, is given to account for Part two of the budgetary recommendations in the Citizens' Budget. This consists of two parts:

1—41 million dollars to supplement, create and support Cancer Centers in 20 sites where Task Force groups can be established, or located as part of a national program of cancer research cooperation, and

2—10 million dollars for the beginning of a non-matching construction program in these Cancer Research Centers, aimed at providing the research facilities needed at these sites of Task Force operations. The need for these is so great as to justify this request for special consideration. If granted funds in Fiscal 1968, these funds would be mainly for planning and for temporary and permanent facilities construction.

Part One of the recommended Budget has to do with the sum of \$65,640,000 above the President's Budget of \$183,356,000 for a total of \$300,000,000 for Fiscal 1968, a sum which is \$116,644,000 above the President's Budget for Fiscal 1968 (\$183,356,000).

CLINICAL CANCER TRAINING GRANTS

Included in the sum of \$65,640,000 above the President's Budget for Fiscal 1968 is a sum of 2 million dollars for clinical cancer training grants. This is the life's blood of clinical investigation and cancer research of tomorrow, a subject which has been discussed many times with this Committee in previous years.

CANCER CENTER PLANNING GRANTS

Included also in this addition to the President's Budget is the sum of one million dollars to fund Planning Grants which will permit the many parts of the country to make and complete plans for Cancer Centers.

SMOKING

The National Advisory Cancer Council has twice in the past year called upon the government to step up its efforts to reduce smoking. So has the Task Force on Chronic Bronchitis and Emphysema, which called emphysema a "man-made epidemic" and laid much of the blame for the recent, fearful increase in this disease on cigarette smoking.

In 1965, the Public Health Service established the Clearinghouse to do three things—to carry on research into smoking behavior, to help local and state groups and to undertake professional and public information. The appropriation from the Clearinghouse for its first year was about 2 million dollars. It was about the same 2 million dollars in FY 1967 and in the bill now before this Committee, it remains \$2 million.

This is entirely inadequate for the purposes of the Clearinghouse. Two of its activities are in need of additional support and the appropriation should be raised to \$4 million for FY 1968.

One of these activities is professional education. When cigarette smokers have the opportunity of talking with their physician about smoking, their chances of giving up smoking are greatly increased—by example if nothing else, for most physicians who were formerly smokers have now given up cigarette smoking themselves. The problem is to interest more physicians in the need for educating their patients, and to arm physicians with better information as to how they may help their patients who need or desire to quit smoking. There is a program already devised to accomplish these twin goals; it cannot be carried on effectively with present funds.

The second activity which needs additional support is in developing better information and better program materials for the use of schools, health agencies and community groups. Forty States have now set up inter-agency councils on smoking and health, and many more such groups have been established in local communities. Enormous interest has been developed; many thousands of individual physicians, parents, teachers and civic leaders are involved. Their efforts can be wasted and their enthusiasm dimmed unless they receive support and help. Studies carried on over the past two years have already indicated the direction that educational and informational campaigns must take to help the smoker decide what he wants to do about the problems of cigarette smoking.

At the present time, some \$250 million annually is being spent by tobacco manufacturers to promote the use of their products. The sum of \$4 million seems a small price to pay to help the American consumer protect his health.

NEWSWEEK ARTICLE

(The article follows:)

HOUSE OF CANCER

One day in April, a hematologist at Atlanta's Henrietta Egleston Hospital for Children peered at a blood sample under his microscope and confirmed that

5-year-old Ricky Harper of Douglas, Ga., had leukemia. Leukemia is an incurable cancer of the blood, but tragic as it was, the case seemed unremarkable: leukemia, the most common childhood cancer, strikes 18,000 Americans a year. But then, doctors interviewed the youngster's mother who told them that she and her husband, telephone repairman Thurston Harper, had moved into a small concrete-block house in Douglas in 1964, and that her son was the third person to live there who had developed leukemia. The U.S. Public Health Service's National Communicable Disease Center in Atlanta was alerted; and last month, Dr. Peter McPhedran drove down to investigate the "cancer house."

Interviewing doctors and checking hospital records, McPhedran confirmed the mother's story. In July 1958, leukemia had been diagnosed in a 7-year-old boy just a year after his family had moved into the house. A 36-year-old woman, who had moved in next, developed the disease in 1963. McPhedran set out to determine if there was something about the house itself—the stone out of which it was built, the land it stood on—that might promote leukemia.

Geiger count

The NCDC investigator knew that excessive exposure to radiation can cause leukemia. But when he went over the house with a Geiger counter, McPhedran found that the "background" radiation emitted naturally from all soil and stone was within the normal range. Further interviews with townspeople and relatives of the Douglas leukemia victims failed to suggest that any of the leukemia victims were exposed to cancer-causing chemicals such as benzene. Last week NCDC doctors planned to check the possibility—admittedly remote—that leukemia is contagious—that is, that a virus may have transmitted the disease from one occupant of the house to another (this happens with laboratory mice). They are now collecting blood samples from relatives of the leukemia victims which will be sent to the National Cancer Institute in Bethesda, Md.; there researchers will look for virus particles.

Concurrently, NCDC is looking into two other leukemia "clusters" involving dwellings. An 18-year-old youth who moved into a second-floor apartment in North Kansas City, Mo., in 1964 developed the disease two years later. Later, a 28-year-old woman who had lived on the first floor from 1962 to 1966 contracted leukemia six months after moving away. The second cluster involved a single-family house in Prairie Village, Kans. In February 1961, just over a year after moving out of the house, a 41-year-old man developed leukemia. Last January, a 15-year-old girl who lived in the same house for six years contracted the disease.

Niles story

The possibility that leukemia is contagious has also been raised by several community cluster cases. The most striking was a leukemia "outbreak" in Niles, Ill. (NEWSWEEK, April 22, 1963). Eight youngsters living in a 2-square-mile area developed leukemia during a three-year-period—a rate five times normal for a community of Niles's size. Also, the cases occurred in two distinct waves—three cases between the fall of 1957 and the following spring, and five cases between the winter of 1959 and summer of 1960. These outbreaks, NCDC investigators learned, coincided with reports of an illness resembling rheumatic fever, suggesting that an infection was making the rounds that might have caused both diseases.

At about the same time as the Niles cluster, leukemia struck three children living in the same neighborhood in Orange, Texas. More recently, NCDC has begun to investigate an unusual incidence of leukemia in Fredonia, an isolated village of 425 in northern Arizona. In a town that size, about one case would be expected every 25 years; instead four occurred between 1960 and 1964.

So far, the NCDC investigators have failed to produce any satisfactory explanation for the cluster cases of leukemia. If leukemia is indeed caused by a virus, it is certainly not as catching as measles, mumps and other childhood illnesses. Doctors and researchers, after all, have worked in intimate proximity to leukemia patients for decades without succumbing. "For the time being," says Dr. Clark W. Heath Jr., chief of the NCDC leukemia section, "we'll have to chalk these cases up to chance."

STATEMENT OF DR. R. LEE CLARK, DIRECTOR AND SURGEON-IN-CHIEF, THE UNIVERSITY OF TEXAS M. D. ANDERSON HOSPITAL AND TUMOR INSTITUTE AT HOUSTON, TEX.

ENDORSEMENT OF DR. FARBER'S STATEMENTS

Dr. CLARK. Senator Hill, it is a pleasure to get together with you and your committee once again to discuss this subject of mutual interest.

Senator HILL. It is a pleasure to have you.

Dr. CLARK. All of us in the field of cancer have great confidence in you. For we feel that you and the late Representative Fogarty have demonstrated sincere understanding of the problems and possibilities in our fight against cancer. Both of you have exerted untold hours of effort to back our fight for the funds necessary to sustain and develop these programs.

Senator HILL. Thank you, sir.

Dr. CLARK. Everything we say today is in the context of these perilous times. We know that our needs in cancer will have to be moderated with the times and the opportunities, but at least we are thinking with you, and will be prepared to implement these things if and when you are able to provide the funds.

I heartily endorse all of the statements Dr. Farber has made. I have had the privilege of working with him toward the goals he mentioned for most of our professional lives.

Senator HILL. You have been a team, haven't you?

Dr. CLARK. Very much. I am afraid he has been the greater contributor in this effort, but it has been a pleasure to be with him.

Senator HILL. You have been helpful to this committee, too.

PROGRAMS DESERVING PRIORITY

Dr. CLARK. There are certain key programs of the National Cancer Institute that are deserving of and should be given priority. These key areas are being singled out for emphasis, either because they have, through past performance, proved their superior effectiveness and value in the overall progress of cancer control, or because in them lies the greatest promise of the most direct and rapid approach to achieving the best returns for our mutual investment in the individual cancer patient, who after all is the ultimate *raison d'être* of the presence of all of us here today.

TEACHING GRANT PROGRAM

The oldest of our categorical institutes under the U.S. Public Health Service, the National Cancer Institute, in 1947 instituted the formula-type undergraduate cancer teaching grants program upon recommendation of a special conference of leading members from the fields of education, medicine and the allied sciences.

Senator HILL. That is 10 years after it came into being. It came in in 1937.

Dr. FARBER. I believe Maverick introduced the bill for that in the House.

Dr. CLARK. An exhaustive evaluation of this program 10 years later revealed that this teaching grant program had, more than any other

single program, significantly improved the diagnosis, treatment and care of patients with cancer. The cancer knowledge of graduating medical students, measured by objective examinations, had shown a steady increase over the 10-year period of this program.

In a 1962 report of the activities of the National Cancer Institute the Appropriations Committee of the House of Representatives commented that they were "concerned that long-range training objectives be set to meet the need for increasing the pool of trained manpower, both for cancer research and control."

Certain inadequacies and further needs of the cancer training program had long been recognized by leading members in the field of cancer, and then members—in 1963—of the National Advisory Cancer Council undertook to redesign the cancer teaching program within a more flexible framework.

In the changeover from the previous formula grant structure which provided \$25,000 for undergraduate teaching of cancer in medical, dental, and osteopathic schools, the new guidelines established by the members of the National Advisory Cancer Council provided for significant changes designed to modernize and upgrade cancer teaching through broadening the base of the total program.

Formula grants had been awarded only to medical schools, dental schools, and osteopathic schools. The new clinical cancer teaching grants were expanded to include categorical research institutions and hospitals, and to include training for the physician at the intern, resident, and continuing education levels and also to include training of paramedical personnel as well as the undergraduate physician.

We members of the new clinical cancer training committee have sought to inculcate even more rigid qualifications of applicant institutions to assure that the purposes for which these training grants are awarded are being met. We felt it was very important to remove any restrictions and award them on a competitive basis of accomplishment. The annual award of \$25,000 which has been granted over the past 20 years is no longer adequate. To do the same amount of work would now require about \$60,000 or \$75,000 annually.

Senator HILL. To do the same work?

Dr. CLARK. Yes, sir.

We are insisting on cancer teaching programs that demonstrate a true integration of cross-disciplines, that the internist be included, and that representatives of all departments on deans' committees be active participants in these cancer teaching programs in order to satisfy the recognized need for a multidisciplinary approach to the adequate care of the cancer patient. Cancer care and training in cancer is certainly a team job now as never before.

Senator HILL. It has developed, hasn't it?

Dr. CLARK. Yes, sir, just in the short space of years since we have been meeting with you.

The newly created regional medical programs in heart disease, cancer, and stroke already have demonstrated the tremendous need for increased numbers of trained manpower. Thus, it cannot be over-emphasized that increased and continued support of this clinical cancer training program will provide a valuable pool of badly needed manpower.

There are now in process the formation of 19 new medical schools, either completed or planned, which will result among other things in two significant facts. One is that there will be a further drain on the trained manpower now available to staff these schools. The other is that, at the same time, they will be providing the training of future additional manpower. They should be utilized to the maximum.

Senator HILL. Those schools will come through on time?

Dr. CLARK. Yes, sir; I hope so.

We are also insisting that a further requirement for qualification is that there be a full-time coordinator of the clinical cancer training program in any institution awarded a training grant; that his staff include active representatives from departments other than his own; that the program be structured toward improved cancer teaching through inventive explorations into new and better methods of teaching techniques; and that there be provided a meaningful method for the analysis and evaluation of results of their cancer teaching program.

We feel that with the new schools and expanding horizons in cancer research and teaching an additional \$2 million will be required this year if this program is to expand as it should in order to incorporate the manpower opportunities afforded by the Federal rules. The clinical cancer training committee has already received grant applications for 84 of these training programs; 62 have been awarded. Other applicants were declined, but will be afforded other opportunities to reapply under these new and more strict rules.

I think this program represents a foundation upon which we are building for the future. Because the old formula type program has been under criticism for simply handing out \$25,000, we feel that in this area the new clinical cancer training program will be a strong and meaningful addition to the total cancer program.

NEED FOR SPECIAL TASK FORCE GROUPS

I would like to reemphasize Dr. Farber's statements on the need for increased support of and an increased number of special task force groups. The task force technique approach to a special problem has already proved itself; we are getting outstanding returns from our investments in the virology and human leukemia task force since its organization.

The rising percentages in cures, remissions, and tumor regressions we are now realizing with the use of chemotherapy, particularly in acute lymphocytic leukemia in children, is but one graphic illustration of the progress and possibilities in the task force technique.

The task force represents a coordinated effort at the national level from a number of institutions and results in getting answers more rapidly by providing patient populations sufficient for statistically significant results. The role of the categorical cancer institute is becoming better known and understood through the task force programs; they are furnishing the trained manpower, the patients, and the physical resources necessary to exploit leads to the maximum.

The progress that has been made in just the past 10 years with funds furnished by the Federal Government for the chemotherapy program gives us a picture of what we can expect in the future treatment of systemic cancer. Twenty years ago there was no way to treat systemic

cancer. Today remissions and even some cures in choniocarcinoma and Burkitt's lymphoma have been accomplished with the use of chemotherapy.

In the meantime, most important of all, the chemotherapy program has brought the internist into the cancer management program, and completed the cancer team. Today we are no longer abandoning these people who are usually considered hopeless to marginal activities or quacks or simply to the use of pain-killing drugs, as we were doing in the past.

This is real progress, and was made possible directly and only through your appropriations for these programs.

There are other intensely interesting and impressive examples that I don't have time to go into in detail except to mention briefly; for example, this year we are now exploring methods of increasing the immunological resistance of the host. We have used techniques such as reverse isolation, now have one of the three available machines made by IBM that is used to separate the different blood elements, so if your patient needs platelet or white blood cell replacement transfusion, you can circulate the donor blood through the machine, extract these elements, and return the remaining plasma to the donor in one operation. This machine has been in use at our institution for approximately 6 months.

We have one mother who has given 78 transfusions of platelets to her leukemic child in a 3-month period.

Senator HILL. Through the use of this machine?

Dr. CLARK. This and other techniques. It is very interesting.

Senator HILL. It is indeed.

Dr. CLARK. We think it will be a real contribution to the supportive therapy of the sick in this phase of cancer management.

Increased knowledge in and understanding of the life island technique will provide us with eventual control of the bacterial environment of the individual so when we come to the immunological suppressive approach in organ transplants, we will know much more about how to control and prevent lost rejection, with resulting preservation of life.

CLINICAL CANCER RESEARCH CENTERS OR PROGRAMS

To realize an immediate acceleration in our attack on cancer there should be research, teaching, and service demonstration centers for cancer in all the major population areas of this country. The success of the task force technique is just one example of the impact on the improved care of the cancer patient possible within a region that already has available such a unit.

Each of the categorical cancer institutes now in existence serves as an invaluable nidus in demonstration and training within their area because they have the necessary accumulation of patients to get maximum returns; they maintain a staff working full time on the cancer problem; and they provide opportunities for the basic scientist to aim his efforts directly toward the ultimate goal. Such categorical centers now are being utilized in the Clinical Cancer Research Centers or Programs grants program which is being funded this year also, and to create these both in the research centers of medical schools and in research hospitals, an additional \$2 million is needed.

CATEGORICAL CANCER INSTITUTES

There is obvious need for more categorical cancer institutions and it cannot be overemphasized that a more equitable geographic distribution of regional cancer centers is of utmost importance. By placing additional categorical centers in regional areas not now served you enlist the fiscal resources of that area and their civic and medical interest are mobilized to work together with Federal funds to bring into being a mutually profitable partner relationship. How this can work in fact as well as theory is ably demonstrated best by showing how such a partnership can work in a center such as ours—The University of Texas in Houston. In our own center we have this year, with your fiscal help and that of our own citizens, just completed a \$10 million, 230,000-square-foot research addition to our institute which will make possible even more research effort, so that right now, we ourselves could make profitable use of an additional budget of \$5 million for projected research project grants.

A report of the budget prepared by the State of Texas backs up this Federal-State partnership which I think will be of interest to you. We now receive \$12 million for our institute from the State, and \$6 million from the Federal Government in grants. An appropriation for the projected new building in 1967-68 was approved by the State legislature last week, and I hope the Federal Government will be able to come up with the additional \$3 million in funds to bring it up to the \$5 or \$6 million needed to fully activate this program.

This is the type of thing that we think would mobilize the resources in other regions, because although the State (in our case) is providing two-thirds of the basic research support given the institution, without your help we wouldn't have been able to carry the program to its present fruitful state and with such rapidity of growth.

Senator HILL. You have a real program, don't you?

Dr. CLARK. If we keep on, sir, we will.

Over 50 percent of our budget is for research and education. Patient care has reached a maximum at present of 16,000 patients a year.

Senator HILL. 16,000 a year?

Dr. CLARK. Yes, sir. But patient charges constitute only about one-third of the total fund sources.

We feel our patient care facilities are inadequate, and have just secured approval for an additional 300 beds.

Senator HILL. How many beds do you have now?

Dr. CLARK. 300 now. We need to add the 300 more approved by the legislature this year, because we are running over 600 patients in the clinic daily to have a rounded service. There are areas in cancer research that have hardly been touched, i.e., the hormone-maintained, the genetic variations, the area of carcinogenesis, epidemiological studies, and rehabilitation. In the last 2 years rehabilitation has come to be a very active part of cancer work, because we are saving enough patients now that we can demonstrate effectively that the patient doesn't have to wait 5 years to maintain a useful and productive life following his extensive treatment.

If you will pardon this personal reference to our institution, it was merely to point out a classic demonstration of what you in the Federal Government have made possible on a partnership basis.

Senator HILL. Well, you have certainly done your part of the partnership. You have been a wonderful partner.

Dr. CLARK. Thank you, sir. I think there are many other areas in the country where such resources could be similarly utilized.

We have already materially exhausted our present resources in the area of definitive treatment. The avenues of direction in our future efforts to control cancer can be defined clearly by a look at the 5-year survival results of our present treatment methods compared to the percentage of incidence of occurrence in the different sites of the disease.

Furthermore, these figures also should be compared by recognizing those types of cancers most likely to be cured and those types least likely to be cured by our present treatment methods.

The cancers that are most likely to be cured comprise 75 percent of all cancer; and these are the ones we can treat locally if we diagnose them early. The obvious inference I am making is that earlier research and detection of even precancerous areas will benefit all 75 percent of those patients most likely to be cured.

There is really an improvement even in these cancer patients in whom we are getting poor results. We have just started the treatment of cancer of systemic origin, as we saw with the report on chemotherapeutic progress. Hopefully there will be continuing improvement later with use of the immunologic approach in areas like liver, pancreas, lung, which now constitute the other 25 percent of cancers and in which still only about 5-percent cure out of a hundred is realized. For instance, in leukemia, only in places like Dr. Farber's are we getting 5-year survivals of those patients in stage A-1. Cancers of the stomach, and of the prostate, and so on, we are not really curing. I won't elaborate further on these because the areas of approach that we must attack them from are obvious and very fundamental, and they cannot be neglected if we are to make progress.

I will skip over to around page 9 in my conversation, and comment on those patients in the "best results" group that we are now losing is because their cancer has become generalized.

Senator HILL. I want your full statement in the record, Doctor.

Dr. CLARK. All right, sir; thank you very much. While we are seeking ways to cure systemic cancer we should find some way to keep the cancer localized in these patients, not to let it become systemic, through better diagnosis and treatment.

This brings to mind one project in which you are joining with us. We have done 3 to 5 years of work on the use of hyperbaric oxygen in animals to enhance therapy. This work has shown that irradiation given in atmospheres of oxygen, compared to equal doses of irradiation given in air, in four different types of cancer in animals will effect between a 45- and 93-percent cure, whereas only a 10-percent cure is achieved in the radio therapy in ordinary air.

We presented this report to the National Cancer Institute, and are now designing in collaboration with them a hyperbaric oxygen unit combined with a new linear accelerator which will give us electron beams and photon beams up to 30 million volts for a treatment of patients.

The future of this therapeutic technique looks very promising indeed for cancer that is still localized.

We are also looking for drugs to use in this area of systemic cancer therapy, but while we are working on methods for the systemic and ultimate cure by treating a patient generally, these local areas of disease must be contained and treated very diligently in task forces and by other methods so that we can then take better care of the 75 percent of cancers than we are already doing.

The fight against systemic cancer will need new avenues of approach for in-depth evaluation of chemotherapy, immunotherapy and, perhaps, even viral therapy.

PLANNING GRANTS FOR CATEGORICAL CANCER INSTITUTES

There needs to be increased support for planning of such regional categorical cancer centers, so that there can be brought together all these elements in a coordinated effort—the task forces, the clinical cancer research centers, the regional medical centers. This planning money should go toward studying a broader concept of the multidisciplinary cooperative care of the cancer patient through the regional structure into a cohesive unified planned effort.

An appropriation of \$1 million would greatly help in getting such a planning program on the road.

Sentaor HILL. Getting the planning done?

ANIMAL REGULATIONS

Dr. CLARK. Yes; specifically, planning grants for the establishment of new and expansion of existent categorical cancer research institutes. There is one other thing that should be mentioned, and it may be more appropriately funded in other ways, but we in cancer research find that these new animal regulations have been very drastic and we are not prepared to meet the regulations. In order to do this, funds should be provided on a nonmatching basis. One or two million could be utilized immediately for this purpose in the near future.

PROGRESS IN CANCER

I thought it might be interesting to briefly review where we are today, because sometimes only by looking back can one see that they have walked forward.

Since the turn of the century, after the discovery of radium, we have defined the usefulness of radical surgery. We have developed megavoltage radiation therapy and radioactive CO⁶⁰ in teletherapy units and this is probably the greatest single advance since the discovery of radium. This brings megavoltage availability to the community level.

We have begun to use planned combined therapy. The advent of chemotherapy has made the internist a part of the cancer team and has introduced the systemic treatment of cancer. We are giving the patient with systemic cancer such treatment as hormones, cortisone, chemotherapy, and general supportive therapy. We have now brought in an attack on the treatment of systemic cancer, while the two major therapies—surgery and radiotherapy—have been local attacks. These, nevertheless, have been drastically improved since the turn of the century—really since the war.

Senator HILL. Since World War II?

Dr. CLARK. Yes, sir.

The development of early detection of cancer of the cervix and, hopefully, other areas by further developments in cytology.

New, truly fundamental medical and life science disciplines have been developed, such as molecular biology and medical genetics, in their broadest dimensions, and these combined with clinical research and developmental therapeutics will find the way for the conquest of systemic cancer.

We feel this progress in cancer research and therapy would not have been possible without national support, not only from the National Cancer Institute, but from all the other agencies and medical science institutes in bringing about all the fundamental knowledge and in the actual creation of new sciences.

This progress has been achieved primarily through the mechanism of the categorical cancer institutes. Only in this kind of setting, where there is active bringing together of the basic scientist with the clinical physician can there be organized efforts to bring research results directly to the bedside, with the least delay possible, negating the need for gaps between basic and applied science.

Let me mention one thing here. In the last month or two, there has been considerable publicity about the treatment of a child patient in Dallas with l-asparaginase. This l-asparaginase was first discovered, or noticed as a phenomenon, by Dr. John Kidd of Cornell in 1953. This makes us wonder what other phenomena there may be lurking in laboratories that would be applied to the human right now. Who knows but what it may be the answer to what we are looking for. So the area to consolidate is that between basic science and clinical application, both of which are extremely vital.

FUNDS REQUIRED

We feel to do this one needs the opportunity to coordinate teaching and research with patient care in a single categorical facility. We could use \$50 million a year for the next 5 years to improve, build and equip 20 such categorical cancer research institutes in the United States.

I have one thought, if you have a minute, Mr. Chairman.
Senator HILL. Go ahead, Doctor.

SCARCE MANPOWER

Dr. CLARK. I wanted to share it with you. I have had considerable opportunities to work with the scientists at NASA since it was established, and have seen truly phenomenal things there which have yet to be utilized in medicine. Here is an instance where we are missing a little realized opportunity in our field to make our scarce manpower many times more effective.

Technology for automation, provision of new materials, application of recently learned physical forces and sciences, mechanical and chemical phenomena are yet to be applied to biomedical research which could lead to better care in treatment of the sick, and in prevention of disease.

This Nation could now build the teaching research center of tomorrow, incorporating into it a superhospital facility as radically different as the spaceships of tomorrow.

Senator HILL. Do you really think that?

Dr. CLARK. I do, sir. I am trying to plan one now.

This can only be done in the United States of America and would include the use of automation and computerization of information, daily activities, and of records resulting in a current audit of progress and constant surveillance of patients, and mechanization of transport and service activities.

I recently saw an entirely new procedure for transporting materials in hospitals that will require the redesign of all hospitals in order for them to be up to date right now.

Senator HILL. You aren't going to make them all obsolete, are you?

Dr. CLARK. They already are, I am afraid.

The control of environment would make possible studies in human immunology and host resistance which are now only conjectural, but perhaps replacement of organs can be done before the end of this century.

Bioengineering and environmental health research are sciences, that should be continuously considering all possible avenues of human betterment in a material world.

In recapitulation, Mr. Chairman, funds for one or more "pilot plants" incorporating these advances should be provided but only with assurance that they would receive basic local support and be freely available for model reproduction when completed.

Thank you very much.

(The statement follows:)

Mr. Chairman and members of the Senate Appropriations Committee, I am Dr. R. Lee Clark, Director and Surgeon-in-Chief of The University of Texas M. D. Anderson Hospital and Tumor Institute at Houston for the past 20 years. I am presently serving as Chairman of the Clinical Cancer Training Grants Committee of the National Cancer Institute; am a senior member of the Commission on Cancer of the American College of Surgeons, member of the American Cancer Society, the Association of Cancer Institute Directors, serve on the scientific Advisory Boards of Roswell Park Memorial Institute and the Cancer Research Center of Columbia, Missouri, and in 1965 was privileged to serve as a member of the President's Commission on Heart Disease, Cancer and Stroke. My personal concern and activities have been concentrated in the field of cancer, including the practice of cancer surgery, for over 20 years.

I am grateful for this opportunity to counsel with you and to endorse wholeheartedly Doctor Farber's statements in support of the Citizen's Budget for the National Cancer Institute for fiscal year 1968 in the amount of \$300,000,000, an increase in excess of \$116,000,000 of the President's Budget of \$183,356,000.

As is true of any nationwide program, so it is of the National Cancer Institute, that there are certain key program areas that are deserving of and should be given priority in any approved increases in funding. These key areas are being singled out for emphasis either because they have, through past performance, proved their superior effectiveness and value in the overall progress of cancer control, or because in them lies the greatest promise of the most direct and rapid approach to achieving the best returns for our mutual investment in the individual cancer patient, who after all is the ultimate *raison d'être* of the presence of all us here today.

I. CANCER TRAINING GRANTS PROGRAM

The oldest of our categorical Institutes under the U.S. Public Health Service, the National Cancer Institute, in 1947 instituted the formula type undergraduate cancer teaching grants program upon recommendation of a special conference of leading members from the fields of education, medicine and the allied sciences. An exhaustive evaluation of this program ten years later revealed that this teaching grant program had, more than any other single project, significantly improved the diagnosis, treatment and care of patients with cancer. These significant improvements resulted primarily from the increased cancer knowledge demonstrated by

graduating medical students, as measured by objective examinations, over the ten-year period of this program.

In a 1962 report of the activities of the National Cancer Institute, the Appropriations Committee of the House of Representatives commented that they were "concerned that long-range training objectives be set to meet the need for increasing the pool of trained manpower, both for cancer research and control." Certain inadequacies and further needs of the cancer training program had long been recognized by leading members in the field of cancer, and the then members (in 1963) of the National Advisory Cancer Council undertook to redesign the cancer teaching program within a more flexible framework.

In the changeover from the previous formula grant structure for undergraduate teaching of cancer in medical, dental and osteopathic schools, the new guidelines established by the members of the National Advisory Cancer Council provided for significant changes designed to modernize and upgrade cancer teaching through broadening the base of the total program. Formula grants had been awarded only to medical schools; the new Clinical Cancer Teaching Grants were expanded to include categorical research institutions and hospitals, and to include training for the physician at the intern, resident, and continuing education levels as well as the undergraduate level and also to include training of paramedical personnel. Furthermore, members of the new Clinical Cancer Training Committee have sought to inculcate even more rigid qualifications of applicant institutions to assure that the purposes for which these training grants are awarded are being met. We are insisting on cancer teaching programs that demonstrate a true integration of cross disciplines, that the internist be included, and that representatives of all departments on Deans' Committees be active participants in these cancer teaching programs in order to satisfy the recognized need for a multidisciplinary approach to the adequate care of the cancer patient.

The newly created Regional Medical Programs in Heart Disease, Cancer and Stroke already have demonstrated the tremendous need for increased numbers of trained manpower. Thus, it cannot be overemphasized that increased and continued support of this Clinical Cancer Training program will provide a valuable pool of badly needed manpower. There are now in process the formation of 19 new medical schools who will be eligible for funds under this program which will, among other things, result in two significant facts. One is that there will be a further drain on the trained manpower now available to staff these schools. The other is that, at the same time, these schools will be providing the training of additional manpower to help meet the continually expanding future needs.

We are also insisting that a further requirement for qualification is that there be a Full Time Coordinator of the Clinical Cancer Training Program in any institution awarded a training grant; that his staff include actively participating representatives from departments other than his own; that the program be structured towards improved cancer teaching through inventive explorations into new and better methods of teaching techniques; and that there be provided a meaningful method for the analysis and evaluation of results of their cancer teaching program.

An increase of an additional \$2 million over that of the proposed budget is the absolute minimum needed to assure continued support of this extremely vital Clinical Cancer Teaching program.

II. TASK FORCE PROGRAM

I would like to reemphasize Doctor Farber's statements on the need for increased support of and an increased number of special Task Force groups. The Task Force technique approach to a special problem has already proved itself; we are getting outstanding returns from our investments on the Virology and Human Leukemia Task Force since its inception. The Task Force approach represents coordinated effort at the national level from a number of institutions and results in getting answers more rapidly by providing patient populations sufficient for statistically significant results. Through these task force programs the role of the categorical Cancer Institute is becoming better known and understood; these Institutes are furnishing the trained manpower, the patients, and the physical resources necessary to exploit leads to the maximum. By collaborating together in the kind of coordinated fashion employed by these nationally organized Task Force units, we can be assured that all available resources are adequately used and understood by each one of us.

A minimum of \$6 million increase over that proposed in the 1968 budget for support of task force units would make possible immediate initiation of similar productive studies on cancers of the lung, colon, rectum, prostate and bladder.

III. CLINICAL CANCER RESEARCH CENTERS, OR PROGRAMS

To realize an immediate acceleration in our attack on cancer there should be research, teaching, and service demonstration Clinical Research Centers, or Programs for cancer in all the major population areas of this country. The success of the task force technique is just one example of the impact on the improved care of the cancer patient possible within a region that already has available such a unit. Another example is that of the categorical Cancer Institutes now in existence, each of which serves as an invaluable nidus in demonstration and training within their region because they have the necessary accumulation of patients to get maximum returns; they maintain staffs working full time on the cancer problem; and they provide opportunities for the basic scientist to aim his efforts directly toward the ultimate goal.

To establish additional or expand existent Clinical Cancer Research Centers or Programs in the Medical School Hospitals and in Cancer Institutes, an additional \$2 million in federal support is urgently needed.

IV. ANIMAL CARE FACILITIES

The drastic changes in research animal laboratory procedures and equipment now required by Public Law 89-544 have created a real problem in that no provision has been made available for funds to upgrade animal care facilities. It may be that there is a more appropriate source (than the National Cancer Institute) to fund these facilities so they can meet the newly created requirements.

Support in the amount of \$1.5 million to enable present research animal facilities to meet these qualifications should be provided, if not through the National Cancer Institute, then certainly through the appropriate federal agency.

Systemic, or generalized, cancer is our main problem now and represents the forefront of our working efforts in cancer.

We have already materially exhausted our present resources in the area of definitive treatment. The avenues of direction in our future efforts to control cancer can be defined clearly by a look at the 5-year survival results of our present treatment methods compared to the per cent incidence of occurrence in the different sites of the disease. Furthermore these figures also should be compared by recognizing those types of cancers most likely to be cured and those types least likely to be cured by our present treatment methods.

TABLE 1-A.—*Best results*

	Percent of—	
	Total cancer	5-year survival
Skin.....	10.0	88.3
Lip.....	8.0	88.1
Corpus uteri.....	5.2	57.0
Soft tissue.....	2.3	50.5
Oropharynx.....	1.6	47.0
Cervix.....	11.5	45.7
Thyroid.....	1.2	45.4
Breast.....	14.1	43.2
Salivary glands.....	0.9	42.3
Melanoma.....	2.0	40.5
Bladder.....	3.8	31.0
Testis.....	0.8	27.6
Ovary.....	3.5	26.4
Rectum.....	2.9	25.0
Colon.....	6.6	22.3
Larynx.....	1.1	15.0
Total incidence.....	75.5	

TABLE I-B.—*Poorest results*

	Percent of—	
	Total cancer	5-year survival
Liver.....	1.7	2.8
Pancreas.....	1.7	3.8
Esophagus.....	.7	3.9
Lung-bronchus.....	5.3	4.4
Leukemia (all).....	3.1	5.9
Stomach.....	3.9	7.1
Paranasal sinuses.....	.2	11.6
Lymphoma.....	3.2	11.7
Multiple myeloma.....	.3	12.4
Prostate.....	4.4	18.9
Total incidence.....	24.5	-----

We find that those patients with the best possibility of cure (Table I-A) comprise 75.5 per cent of all cancers and those patients who, although benefited by treatment, inevitably die of their disease constitute only 24.5 per cent of all cancers (Table I-B). In this latter group are included those patients with 5 per cent \pm 5-year cure rates whose cancer has usually become generalized by the time they are diagnosed. The list of cancers with poorest results of treatment include stomach, esophagus, pancreas, liver, lungs and bronchus, kidney, prostate, leukemia, lymphoma (Hodgkins), multiple myeloma, certain sarcomas and brain tumors, other than glioma. Better treatment results in these cancers will be realized only when more effective systemic therapy is discovered, although earlier detection by newer diagnostic techniques would undoubtedly lead to some improvement in survival rates.

In the group composed of those patients best benefited by current modalities of treatment we find 5-year survivals varying from 88 per cent for skin to 15 per cent for larynx with a general overall average approximating 40 per cent. There is no doubt that even these survival rates in these cancers could be greatly improved if initial treatment was by physicians with oncologic expertise.

Looking at these national incidence rates and percentage trends in 5-year survivals, certain assumptions become apparent. In those areas where we are realizing the highest per cent of 5-year survivals, apparently our present therapeutic methods are effective. If our present modes of therapy are, indeed, the main reason for these higher 5-year survival rates, they should be continued and improved by clinical research, and in cancer of these sites our efforts should be concentrated towards the development of new ways to detect these cancers in the incipient stages, to find the causative factors, with the aim of increasing the effectiveness of our curative therapy even further.

Our greatest opportunity for immediate improvement of cancer care lies in this "Best Results" group. But this improvement lies only in the creation of a cadre of physicians with oncologic expertise working in an environment where their major efforts can be devoted to the cancer patient and where new fundamental knowledge in the field is continuously converted into practical bedside application. We must promote and foster recognition of the need for specialty training to treat cancer properly. The specialty boards, especially of surgery, radiology and now internal medicine and pediatrics have largely neglected the use of cancer teaching services for specialty training. This situation can and must be corrected if progress is to be made.

Those patients in the "Best Results" group that we are now losing is because their cancer has become generalized. While we are seeking ways to cure systemic cancer we should find some way to keep the cancer localized in these patients, not to let it become systemic, through better diagnosis, furthering the present modalities of treatment through using combined therapy in addition to surgery, radiotherapy, chemotherapy and in combining all these with the team approach.

In those areas where we are realizing the lowest percentages of 5-year survivals, quite obviously our present methods of therapy for these cancers are ineffective, they are simply not doing the job. In these cancers, our efforts must be concentrated on the development of new methods of treatment. Also obvious

is that, in these cancers, the disease has already disseminated suggesting that it was present for a long period of time in a preclinical stage. Therefore, efforts at developing new methods for improving detection at the preclinical level should be another goal. Removal of the primary tumor in these cancers, whenever possible, to concentrate on an intensive attack on the disseminated disease should be a third goal.

The fight against systemic cancer will need new avenues of approach with in-depth evaluation of chemotherapy, immunotherapy and, perhaps, even viral therapy. The rising percentages over the past ten years in cures, remissions, and tumor regressions we are now realizing with the use of chemotherapy, particularly in acute lymphocytic leukemia in children, is a graphic illustration of the progress and possibilities in the treatment of systemic cancer through the Task Force technique approach.

TABLE II.—*Clinical cancer chemotherapy*¹—*Advances in past 10 years*

Disease	Treatment	Response
Choriocarcinoma (women).....	Methotrexate, or Actinomycin D.....	80 percent cure.
Testicular tumors.....	Actinomycin D in combination, or mithramycin.....	10 percent cure.
Burkitt's lymphoma.....	Cyclophosphamide, or metho- trexate.....	10 to 20 percent probable cure.
Wilms' tumor.....	Actinomycin D adjuvant to surgery and radiation.....	40 to 80 percent increase in cure rate.
Acute leukemia (children).....	Vincristine.....	60 percent remission rate.
	Cyclophosphamide.....	30 percent complete remission.
	Vincristine.....	50 percent complete remission.
	Vincristine plus prednisone.....	85 percent complete remission.
	Daunomycin.....	20+ percent complete remission.
Acute leukemia (adults).....	Cytosine arabinoside.....	Do.
	Multiple chemotherapy (VAMP).....	Prolonged duration of "unmain- tained" remission. Sixfold increase in survival.
	VAMP.....	30+ percent complete remission.
	Danomyacin.....	30 percent complete remission.
	Cytosine arabinoside.....	20 percent remission rate.
Solid tumors of childhood.....	Cyclophosphamide.....	10 to 60 percent tumor regression.
	Vincristine.....	
	Danomyacin.....	
Lymphoma.....	Vinblastine.....	20 to 60 percent tumor regression.
	Vincristine.....	
	Procarbazine.....	
	Streptozin.....	
Myeloma.....	Melphalan.....	20- to 60 percent response rate.
	Cyclophosphamide.....	Improved survival.
Breast cancer.....	Fluorouracil.....	30 percent regression.
	Cyclophosphamide.....	
Colon cancer.....	Fluorouracil.....	20 percent regression.
Ovarian carcinoma.....	Alkylating agents.....	40 percent regression.
Other "solid tumors".....	Fluorouracil.....	10 to 20 percent regression.
Glioblastoma.....	Mithramycin.....	10 to 30 percent regression.
Head and neck tumors.....	Methotrexate infusion.....	30 percent regression.

¹ Prepared by Dr. Emil Frei, University of Texas, M. D. Anderson Hospital & Tumor Institute at Houston, May 1967.

Our progress in cancer diagnosis and treatment has been phenomenal when one takes a long-range backward look. At the turn of the century, which was only shortly after the discovery of radium, very few cancer cures were being recorded. Just since that time we have accomplished these things in cancer:

1. We have defined the usefulness and role of radical surgery.
2. We have developed megavoltage radiation therapy and radioactive CO⁶⁰ in teletherapy units, probably the greatest single advance since the discovery of radium. This brings megavoltage availability to the community level.
3. We have begun to use planned combined therapy.
4. The advent of chemotherapy has made the internist a part of the cancer team and has introduced the systemic treatment of cancer. We are giving the patient with systemic cancer such treatment as hormones, cortisone, chemotherapy, and general supportive therapy. We have now brought in an attack on the treatment of systemic cancer while the two major therapies—surgery and radiotherapy—have been local attacks and must be continued for improvement of the ill patient today.

5. The development of early detection of cancer of the cervix and, hopefully, other areas by the developments in cytology (Papanicolaou).

6. New, truly fundamental medical and life science disciplines have been developed, such as molecular biology and medical genetics, in their broadest dimensions, and combined with clinical research and developmental therapeutics will find the way for the conquest of systemic cancer.

This progress has been achieved primarily through the mechanism of coordinated cancer activities in cancer research, care and teaching of the categorical Cancer Institute and (to a lesser extent) in a Medical School setting. Only in this kind of setting, where there is active bringing together of the basic scientist with the clinical physician can there be organized efforts to bring research results directly to the bedside, with the least delay possible, negating the need for gaps between basic and applied science.

There is obvious need for more such categorical institutes, and it cannot be overemphasized that a more equitable geographic distribution of regional cancer centers is of utmost importance. By placing additional categorical centers in regional areas not now served you gain the fiscal resources of that area, and their civic and medical interest are mobilized to work together with federal funds to bring into being a mutually profitable partner relationship. How this can work in fact as well as theory is ably demonstrated best by showing how such a partnership can work in a center such as ours—The University of Texas in Houston where two-thirds of the ongoing support is supplied through state funds, the other one-third through federal funds.

To improve, build and equip 20 such categorical Cancer Institutes throughout America would require fund support in the amount of \$50 million over a 5-year period. Within our own institution alone there will be need for \$5 million in additional research grants to carry out projected studies when an additional 230,000 square feet of research area now under construction becomes available in three months. Right now, 58 percent of our institutional budget is for research and education.

V. PLANNING GRANTS FOR CATEGORICAL CANCER RESEARCH INSTITUTES

There needs to be increased support for the planning of additional categorical Cancer Institutes, so that there can be brought together all these elements in a coordinated effort—the task forces, the clinical cancer research centers, the regional medical centers. This planning money should go toward studying a broader concept of the multidisciplinary cooperative care of the cancer patient through the regional structure into a cohesive unified, planned effort. The progress in chemotherapy for systematic cancer, which I cited above, has been made possible only through the partnership created between the National Cancer Institute and the working field studies groups with funds provided by this Appropriations group. This particular group of patients who have been helped would ordinarily have been abandoned to unorthodox practitioners or to a life with only drugs for pain; and this encouraging progress has come to pass only during the past 10 years.

We are urging your endorsement of our request for support in the amount of \$1 million for a planning program in order to speed up the establishment of these regional Cancer Institutes.

We are missing a tremendous and little appreciated opportunity to make our scarce manpower effective in unknown but decidedly greater dimension of productivity. We must use to the fullest capacity available technology for automation, new materials, recently learned physical forces and sciences, mechanical and chemical phenomena which have yet to be applied to biomedical research and medical techniques for better care of the sick and prevention of disease. We could now, with proper funds, design and build the teaching-research center of tomorrow, incorporated into a super hospital facility as radically different as the spaceship of tomorrow. A design to coordinate this possibility can only be done in the United States and would include the use of:

1. Automation and computerization of information, daily activities and records to provide a current audit of progress and for constant patient surveillance.

2. Mechanization of transport and service activities.

3. The use of reverse isolation techniques, such as life island or laminar flow control of environment, including bacteria, making studies in human immunology and host resistance possible, which are now only conjectured,

but so obvious that replacement of human organs and vital parts could be done before the end of this century.

4. Bioengineering and environmental health research science for continuous consideration of all possible avenues leading toward human betterment in a material world.

5. On-line coordination of basic research with clinical medicine applied directly to patient care.

In recapitulation, funds for one or more pilot plants to incorporate these advances should be provided only with assurance that they would also receive basic local support and be made freely available for model reproduction when completed.

Senator HILL. That is most interesting. Is there anything you would like to add, Dr. Farber?

Dr. FARBER. No, Mr. Chairman.

Senator HILL. You have brought us two informative challenging statements.

Dr. FARBER. Thank you, sir.

Senator HILL. I sometimes speak about the golden age of medicine. From what you gentlemen say, we are about to enter that age. In fact, we are already in it; we are moving into that age.

Dr. CLARK. I hope we can find that soon enough to have it last.

Senator HILL. We are deeply grateful to you.

NEUROLOGICAL AND BLINDNESS PROGRAMS

STATEMENT OF DR. CHARLES A. KANE, IMMEDIATE PAST PRESIDENT OF THE AMERICAN ACADEMY OF NEUROLOGY

PREPARED STATEMENT

Senator HILL. Now, Dr. Kane, do you want to proceed first?

Dr. KANE. I am Charles A. Kane, immediate past president of the American Academy of Neurology, section chief, neurology, permanent medical group, Hayward, Calif., and cochairman of the National Committee for Research in Neurological Disorders.

I am pleased and honored to reappear before this committee as a representative of the American Academy of Neurology and spokesman for the American Neurological Association and 20 voluntary health groups concerned with crippling neurological and sensory disorders which affect more than 10 million individuals in these United States. I won't take the time to read the names of the voluntary health groups because they are contained in my prepared statement.

Senator HILL. We will have that statement put in the record, in full.

(The statement follows:)

Mr. Chairman and Members of the Committee: I am Charles A. Kane, immediate Past-President of the American Academy of Neurology; Section Chief, Neurology, Permanent Medical Group, Hayward, California; and co-chairman of the National Committee for Research in Neurological Disorders.

I am pleased and honored to reappear before this Committee as a representative of the American Academy of Neurology and spokesman for the American Neurological Association and 20 voluntary health groups concerned with crippling neurological disorders which affect more than 10,000,000 individuals in these United States. Also represented on the National Committee are three other professional societies: American Laryngological, Rhinological, and Otological Society; National Committee for Research in Ophthalmology and Blindness; and the Society of Neurological Surgeons.

The voluntary health groups represented are: Association for an Aid of Crippled Children, The Deafness Research Foundation, Epilepsy Association of America, The Epilepsy Foundation, Muscular Dystrophy Associations of America, Inc., Myasthenia Gravis Foundation, Inc., National Association for Retarded Children, National Council to Combat Blindness, Inc., National Foundation for Eye Research, National Health Education Committee, Inc., National Multiple Sclerosis Society, National Paraplegia Foundation, National Society for Crippled Children and Adults, Inc., National Society for the Prevention of Blindness, National Tay-Sachs Association, Inc., New York Association for the Blind, Paralyzed Veterans of America, Inc., Parkinson's Disease Foundation, Inc., Research to Prevent Blindness, Inc., and United Cerebral Palsy Associations, Inc.

The recommendations of the Citizens' Committee represent the consensus of the appointed representatives of each of these groups. The fiscal recommendations are made only after careful study in consultation with scientists and experts, both in research and training. The budget is meant to be one which will not only permit the NINDB to pursue present plans, but, hopefully, one which will guarantee a strong impetus to the realization of expanded goals for the future.

I have previously pointed out that, largely through the efforts of this Subcommittee and its counterpart in the House, the annual appropriation authorized by the Congress for the Neurological Institute has increased steadily from \$4,500,000 in 1954 to \$116,296,000 last year. Even this remarkable expansion, however, is not enough to take care of the pressing needs for neurological and sensory research and training currently and to provide for future planning.

The National Committee for Research in Neurological Disorders proposes, therefore, an overall budget for FY 1968 of \$146,000,000 which represents a 2.7 percent increase over that recommended a year ago. This is in keeping with our awareness of mounting responsibilities in other areas of the Federal budget.

I would like to insert a detailed statement of this budget in the record with some supporting data.

Since my distinguished colleagues will speak on a number of other areas of our concern, I should like, with your permission, to confine my further remarks to three specific topics. Following this, I would be pleased to try to answer any questions concerning the proposed overall Citizens' Budget.

HEAD INJURY

A recent Government study indicates that the economic cost to the Nation of illness, disability, and death for the year 1963 was \$93 billion. It is probably safe to estimate that, for this year, this shocking figure is well in excess of \$100 billion or equivalent to about one-sixth of the gross national product. By no means currently available can we hope to eliminate many of the separate categories of illness contributing to this total. However, we can, or rather should be able to, reduce appreciably both the economic impact and the human woes involved in head injuries.

"Scare figures" are of dubious impact, but one must be impressed with three simple statements about head injuries:

- a) *half of all accident fatalities (100,000 in the U.S.A. in 1965) are due to automobile crashes;*
- b) *three-fourths of these victims die from central nervous system trauma;*
- c) *our soldiers in Vietnam are much more likely to survive a less-than-lethal head injury than a citizen-victim of an injury of comparable severity in any of our large cities.*

Since 1965, the Neurological Institute has had a vigorous Section on Head Injury which is investigating the complex biophysical events which make up trauma to the nervous system. From these studies and those going on elsewhere with support from the NINDB, a more rational approach to the multiple factors involved should be forthcoming.

Studies already have shown the importance of sudden bending or stretching of the neck in causing "concussion", the prime feature of closed head injuries. Better designed crash helmets and protective devices will be dividends of this important work.

Last year, the Institute sponsored a conference in Chicago which reviewed the entire field of head injury and recommended guidelines for basic and applied research. Following the recommendations of this conference, the Institute has established four clinical research centers for head injury; strengthened its

Intramural research program relating to the forces of injury and the physiological responses; and has awarded contracts for epidemiological data and for the creation of a brain model. This newly expanded program should move forward rapidly.

A neglected and closely related field is injury of the spinal cord. Such injuries, often resulting in paraplegia and permanent disability, are not receiving adequate interest or investigation. It is estimated that there are some 60,000 paraplegics and quadriplegics in the United States at the present time. The Institute should establish at least one research center to study this problem next year. We request that funds be earmarked specifically for such a center.

EPILEPSY

Over one million of our fellow Americans are suffering from recurrent lapses of consciousness, with or without convulsive seizures—a condition familiarly called “epilepsy”. In a large proportion of these individuals the precise cause of the disorder is unknown and only symptomatic treatment can be given to try to prevent the attacks.

As you know, Mr. Chairman, it was the expressed hope last year of your predecessor, the late Mr. Fogarty, that a “Special Task Force on Epilepsy” be established to coordinate the diffuse activities of both scientific and voluntary health agencies in the field. Guidelines for this program had been outlined in an excellent “review” of the field of the epilepsies in the comprehensive monograph published by my colleague and associate in the American Academy, Dr. Preston Robb of the Montreal Neurological Institute. Thanks to the support of this Committee and its counterpart in the Senate, there has now been established an HEW Departmental Committee on Epilepsy and a comparable PHS Advisory Committee on the Epilepsies appointed by the Surgeon General. Dr. H. Houston Merritt, Dean and Professor of Neurology at Columbia University Medical School, and an internationally known authority on epilepsy, is chairman of the PHS Committee.

The Neurological Institute currently has four major clinical research centers in epilepsy: University of Washington, University of Wisconsin, U.C.L.A., and the new research center at Yale University in New Haven, Connecticut. Neuropharmacology—of key importance in treatment—is being pursued at the University of Utah; a computer-center for brain-wave (EEG) analysis is operative at Los Angeles; and four medical centers (Marquette University, University of Virginia, Montreal Children's Hospital, and Tufts-New England Medical Center) are mounting an intensive study of one drug (ethosuximide) in the petit mal type of epilepsy which afflicts children chiefly.

Future plans at the Institute call for an expanded program in neuropharmacology. The development and evaluation of drugs to treat epilepsy and various forms of spasticity and dystonia is urgently needed. Other plans include epidemiological studies, the formation of an “epilepsy information center”, and further explorations in the complex chemical changes which occur within the cells of the brain. All these efforts should bring closer the day dreamed of by Mr. Fogarty when epileptic patients can be managed more rationally and helped to a more productive life in our society.

MINIMAL BRAIN DISFUNCTION

If the Nation's greatest resource is a healthy populace, its greatest treasure lies in the promise inherent in its children. In the past two decades beginning with the pioneer work of Strauss and Lehtinen in 1947, we have come to appreciate that a significant proportion of children in our school-systems are handicapped by *specific learning disabilities*. I am referring, of course, to the “lost child who can't read”, children with delay in speaking, and the even more complex deficiencies found in a large proportion of school failures.

These children are characteristically overactive, have a reduced ability to concentrate, show impulsive behavior, emotional lability, and, as a result, do poorly in the rigid learning pathways of most of our elementary schools which are geared to the average or “middle-of-the-road” student.

There is no argument about their disabilities; there is considerable controversy about whether all or most of these dysfunctions can be attributed to “minimal brain disfunction”. Suffice it to say that these children, who defy the physician's traditional, unilateral approach, offer a pressing challenge to us.

Fortunately, a philosophy advocating a *multidisciplinary approach* is gaining favor. Thus, the broad range of abilities and competence provided by the pediatric neurologist, the child psychiatrist, the pediatrician, the educational psychologist, specialists and technicians in the communicative arts, the linguist, even the computer-programmer may be necessary to help unravel the tangled skein of these children's disturbances in perception, symbol-formation, and learning.

This need for a total multidisciplinary approach to the many problems of learning and adjustment to normal living is one of the most cogent reasons I personally believe it would be unwise to dissociate research in vision, hearing, or speech from the broader field of neurological investigation.

The Citizens' Committee recommends strongly that the Neurological Institute be urged to develop a broad-based, coordinated program to investigate the causes and to prevent and treat the results of "minimal brain dysfunction". The magnitude of the problem can be appreciated from the conservative estimate that *about ten percent* of all children attending elementary school in this country have a significant degree of learning disability in the presence of normal intelligence. Our Nation can no longer afford or justify neglecting these children with learning handicaps.

Mr. Chairman, I should like to express my appreciation for the opportunity to appear again before you as spokesman for the National Committee for Research in Neurological Disorders.

Thank you!

APPENDIX

Proposed 1968 budget for National Institute of Neurological Diseases and Blindness

[In thousands]

Program by activities	1967 appropriation	1968 President's budget	Proposed NCRND 1968 budget	Increase over 1967 appropriation
1. Grants:				
(a) Research projects.....	\$71,496	\$84,416	\$92,900	\$21,404
(b) Research fellowships.....	3,675	3,805	5,000	1,325
(c) Training.....	18,633	18,780	22,000	3,367
Total, extramural.....	93,804	107,001	119,900	26,096
2. Direct operations:				
(a) Laboratory and clinical research.....	8,485	9,997	10,095	1,610
(b) Collaborative research and development.....	5,565	5,980	8,968	3,403
(c) Biometry, epidemiology, and field studies.....	2,268	2,305	3,487	1,219
(d) Review and approval.....	2,180	2,389	2,500	320
(e) Training activities.....	71	72	100	29
(f) Administration.....	871	889	950	79
Total, direct operations.....	19,440	21,632	26,100	6,660
Total obligations.....	113,244	128,633	146,000	32,756
Unobligated balance reserve.....	2,482			-2,482
Transfer to General Services Administration.....	12			-12
Comparative transfers, NIH management fund.....	558			-558
Total appropriation.....	116,296	128,633	146,000	+29,704
	1967 appropriation	1968 President's budget	Proposed NCRND 1968 budget	Increase over 1967 appropriation
Research grants.....	\$71,496,000	\$84,416,000	\$92,900,000	\$21,404,000

The additions proposed by the Citizens' Budget would be particularly helpful in the following areas:

(1) **Stroke:** A much greater emphasis should be placed on the evaluation of therapy for stroke patients. Significant advances have been made in treatment and rehabilitation, but thousands of stroke patients lie helpless in nursing homes. New therapy must be developed, carefully evaluated, and instituted as soon after stroke as possible. There is also an urgent need for more precise methods to diagnose incipient stroke and aneurysms. A coordinated program for the development of techniques and instrumentation should be instituted.

(2) **Blindless:** Multidisciplinary eye care research centers are needed. Located in diverse geographic areas, these would make possible the immediate application of research findings to individuals at the community level and provide needed facilities for basic and clinical research.

(3) **Early Recognition of Sensory Disorders:** There is a growing awareness of the need for early childhood recognition of speech, language, hearing, and vision problems, as well as possible minimal brain dysfunction. Present studies point to the need for these examinations to be conducted during the 3- to 5-year period in the life of the child, or earlier, in order that necessary therapy may be instituted and the child readied for a normal school environment.

(4) **Evaluation of Therapy:** In addition to the need for an expanded program for the evaluation of therapy for stroke patients, there is a large unmet need for the development and evaluation of drugs to treat epilepsy, Parkinsonism, and various forms of spasticity and dystonia. Also, a controlled study should be instituted to evaluate therapy and develop new therapy for children with motor deficits such as cerebral palsy and with various forms of learning disabilities caused by minimal brain dysfunction and related disorders.

	1967 appropriation	1968 President's budget	Proposed NCRND 1968 budget	Increase over 1967 appropriation
Fellowships.....	\$3,675,000	\$3,805,000	\$5,000,000	\$1,325,000

The proposed Citizens' Budget would make possible expanded and more intensified programs of research in selected critical areas of national need. To provide for the effective conduct of these programs in the future, appropriately trained scientist-clinicians and investigators are needed. By further increasing the number of research fellows, particularly those eligible for Research Career Development Awards—a broader based research attack on the problems of the nervous system and special senses could be undertaken.

	1967 appropriation	1968 President's budget	Proposed NCRND 1968 budget	Increase over 1967 appropriation
Training.....	\$18,633,000	\$18,780,000	\$22,000,000	\$3,367,000

Because of the Institute's carefully laid program planning and development activities, many strong training centers have evolved, particularly in the clinical research disciplines of neurology, pediatric neurology, ophthalmology, and otolaryngology. These centers now have highly developed facilities and a full complement of able faculty and supporting staff. They are able to accommodate an increased number of scientist-physicians for training as teacher-investigators in the neurological and sensory fields. An additional investment in training stipends would capitalize on these facilities.

In addition, the Institute could launch a number of new training programs designed to prepare candidates for careers in research and teaching and the community service aspects of neurology, ophthalmology, and otolaryngology. For example, in neurology, additional training sites can be developed as focal points for training in cerebrovascular disease. In ophthalmology, adequately prepared physicians are being turned away because of a lack of available training

environments. Pediatric neurologists continue to be a critical area of national shortage in programs aimed at the brain-injured child. In the preclinical sciences such as auditory physics, speech pathology, and sensory physiology, additional training programs at the post-masters and post-doctoral levels can be initiated to provide the essential science base for continuing development.

Direct operations

	1967 appropriation	1968 President's budget	Proposed NCRND 1968 budget	Increase over 1967 appropriation
Intramural research.....	\$8,485,000	\$9,997,000	\$10,095,000	\$1,610,000

Additional funds are required for the expanding Laboratory of Perinatal Physiology, in Puerto Rico, for the development of a program for the study of deafness, and for the strengthening of studies of head injury and of regulatory mechanisms of the nervous system.

	1967 appropriation	1968 President's budget	Proposed NCRND 1968 budget	Increase over 1967 appropriation
Collaborative research and development.....	\$5,565,000	\$5,980,000	\$8,968,000	\$3,403,000

The Institute's Collaborative Perinatal Program has entered a new phase. The obstetrical portion was completed last September with more than 55,000 babies born to mothers registered in the study. The needs now relate to funds to continue the follow-up studies of the children, including periodic testing for physical and psychological development and the constant awareness of warning signs of neurological deficits.

The preliminary data have provided important information, but this is largely in the form of clues or trends which must be pursued in greater detail. Huge stores of data must be analyzed before definitive findings will be available concerning such influences as infections during pregnancy, use of drugs, accidents suffered, and the circumstances surrounding birth and early childhood.

Significant progress has been made in establishing the head injury program this past year. This is the initial stage, however, and additional funds will be needed to move this program forward.

	1967 appropriation	1968 President's budget	Proposed NCRND 1968 budget	Increase over 1967 appropriation
Biometry, epidemiology, and field studies.....	\$2,268,000	\$2,305,000	\$3,487,000	\$1,219,000

Needed research information relating to stroke and Parkinsonism is being developed through new epidemiological studies now under way, and other epidemiological studies in the area of blindness have been extended. Also, the Model Reporting Area relating to blindness statistics now includes 14 States.

This year for the first time all four centers of the Neurological Information Network (Parkinsonism, Brain Research, Human Communication, and Vision) are in full operation and are providing valuable information to the research community. The continued support of these programs is important.

The research program relating to chronic diseases of the nervous system made substantial progress this past year with the transmission of a degenerative neurological disease of humans to laboratory animals. This successful transmission from man to animal and, more recently, from animal to animal suggests a link between the slow-acting viruses and a number of neurological dis-

eases such as multiple sclerosis and Parkinson's disease. This development should be pursued as rapidly as possible.

	1967 appropriation	1968 President's budget	Proposed NCRND 1968 budget	Increase over 1967 appropriation
Review and approval, intramural training and administration.....	\$3,122,000	\$3,350,000	\$3,550,000	\$428,000

Adequate funds are requested for these activities essential to the maintenance of staff and the effective administration of this program.

RECOMMENDATIONS OF CITIZENS' COMMITTEE

Dr. KANE. The recommendations of the citizens' committee represent the consensus of the appointed representatives of each of these groups. The fiscal recommendations are made only after careful study in consultation with scientists and experts both in research and training. The budget is meant to be one which will not only permit the National Institute of Neurological Diseases and Blindness to pursue present plans, but, hopefully, one which will guarantee a strong impetus to the realization of expanded goals for the future.

I have previously pointed out that largely through the efforts of this subcommittee and its counterpart in the Senate, the annual appropriation authorized by the Congress for the Neurological Institute has increased steadily from \$4,500,000 in 1954 to \$116,296,000 last year. Even this remarkable expansion, however, is not enough to take care of the pressing needs for neurological and sensory research and training currently and to provide for future planning.

Therefore the citizens' committee would like to propose for fiscal year 1968, an overall budget of \$146 million, which represents a 2.7-percent increase over what we recommended a year ago. As others have stated before this afternoon, we are fully aware of pressing responsibilities in the other fields, and we are aware of mounting responsibilities in other areas of the Federal budget.

AMOUNT REQUESTED

With your permission, I should like to provide only a brief overview of the budget, and not take time from my colleagues, who will mention specific details.

The overall budget is \$146 million. Two-thirds is for research and one-third for fellowship and training grants. Approximately four-fifths for extramural activities, and 20 percent within the direct operations, or so-called intramural activities.

HEAD INJURY

There are four items I would like to speak to at this point: head injury, spinal cord injury, epilepsy—or the convulsive disorders—and the large problem of the minimal brain damaged child, which is a problem which has been neglected.

It is about 65 years since a person stepped out of a horse carriage on Fifth Avenue and was struck by a horseless carriage, and was the first person killed by an automobile.

Since 1898, there have been more people killed by the automobile than in all the wars this country has taken part in.

STATISTICS ON HEAD INJURY

A Government economist, Dr. Rice, has calculated that the economic cost to the Nation of all illnesses, cancer and all the other topics you will hear testimony on, is \$100 billion a year.

Senator HILL. \$100 billion?

Dr. KANE. Yes, sir. Yet we are currently investing less than 5 percent of our budget in this particular area.

I am not pretending to state that all of the efforts that can be mounted by the medical community could influence all aspects of this \$100 billion, but I believe there are items with which we can do something, and certainly head injury is one such area.

Last year in the United States, there were 100,000 deaths due to accidents. Half of these were due to automobile crashes. Three-quarters of the deaths due to automobile accidents came from head injuries.

Regretfully, if one were to step outside and be struck by a taxicab, you would be a lot worse off than if you were struck by a mortar shell in Vietnam.

Our military forces evacuate the injured rapidly and have them under care in 2 or 3 hours, and in a city like New York it may take 6 or 8 hours, and in the first 2 or 3 hours, the critical changes occur.

RESEARCH ACTIVITIES

What are we doing about it? In 1965, a vigorous program was established in the Institute under Dr. Bill Caveness. Research activities are being carried out which have already demonstrated the important role of sudden movement or twisting of the neck as a prime factor which appears in most head injuries manifested by concussion, or sudden loss of consciousness following closed head injuries.

Already this research has pointed to better methods of preventing such injury, such as better helmets, lap and chest belts, and better protection for the individual riding in the motor vehicle.

In 1966, a national conference supported by the Institute was held at the University of Chicago, at which all the research progress and problems in the field were reviewed. These have been summarized in a text on head injury, which was published this year.

PROGRAMS FOR INVESTIGATION

Currently, the Neurology Institute has eight programs for investigation of head injury, and three are underway. The needs as we see them include accumulating more and better data on the types of head injury in order to achieve a better classification. The old standard classification of concussion, contusion, and laceration of the brain is certainly too limited.

There is also a critical need for clinical centers in head injury for the investigation of some of the basic problems such as what causes the brain swelling that occurs hours after the injury. Most of the damage is incurred in a head injury in a fraction of a second, according to our engineering trends, yet the symptoms are often progressing.

Problems in the mathematics and physics of head injury need to be studied.

The long-term sequellae, including the posttraumatic syndrome, in which individuals can be incapacitated for many, many months, after what appears to be a trivial head injury require our greatest attention.

REHABILITATION

Efforts of rehabilitation can be carried out, and we feel that the problem of the person with a head injury who develops epilepsy also offers much to capture our attention.

Along the same lines, we believe that the Institute needs a bit of prodding or stimulation on the neglected problem of spinal cord injuries.

Very briefly, this is an area in which the Veterans Administration has done admirable work, but we feel the Neurology Institute should be stimulated by having earmarked funds for clinical research centers to look into the question of what can be done about patients with spinal cord injuries, how they can be rehabilitated, and what is known about regeneration of nervous tissue. Until recently, the spinal cord was thought not to regenerate, but there is evidence in lower animals, particularly the cat, that it can be stimulated to regenerate. To deal with problems of the 60,000 paraplegic or quadraplegic patients in the Nation, at least one research center should be established at this time under the Neurology Institute.

EPILEPSY

The second topic I would like to say something about, Mr. Chairman, is the problem of the patient with recurrent seizures—the epileptic patient. These constitute at least a million individuals in the United States, and many of these go unrecognized. Treatment, to be perfectly charitable, is empirical and far from satisfactory in many cases.

Senator HILL. In many cases it is not satisfactory; isn't that true?

Dr. KANE. We can satisfactorily treat three out of four of these patients. We should be doing a great deal better. Guidelines for what could be done have already been laid down by the Neurology Institute. Another associate, Dr. Preston Robb, from the Montreal Neurological Institute, has summarized the steps to be taken in an excellent volume which the Institute published. The next step now is for funds to be appropriated.

CLINICAL RESEARCH CENTERS

At the present time the Neurological Institute has four clinical research centers in epilepsy. One is at the University of Washington, one is at the University of Wisconsin, one at UCLA, and a fourth has recently been established at Yale.

There is also a research center at the University of Utah, on the pharmacology of anticonvulsant drugs. Also among the centers that the Institute is currently supporting there is a computer center in Los Angeles for analyzing data derived from the recording of brain waves.

STUDY OF EXTHOSUXIMIDE

In addition, there are four centers in the country—at Marquette; University of Virginia; Montreal Children's Hospital; and the Tufts New England Medical Center in Boston, which are mounting a highly comprehensive and intensive study of a new anticonvulsant drug. A great deal of empirical information has been derived over the last 20 or 30 years since dilantin and phenobarbital, the chief standbys for treatment of epilepsy, were introduced. However, one particular drug, exthosuximide, is being intensively investigated at these four centers to observe its effectiveness in the brief attack which characterizes so-called petit mal epilepsy in children.

Additional centers are needed for the study of the epidemiology of epilepsy, and of chemical techniques to discover the fundamental brain mechanisms in epilepsy.

MINIMAL BRAIN DISFUNCTION

Finally, I would like to say something about the subject of minimal brain disfunction. This is to be differentiated from another entity which has just recently appeared in the national newspapers and has been called "the bright underachiever."

What am I talking about when I use the term minimal brain disfunction?

As Thomas Jefferson said, "Our greatest resource is healthy citizens; our greatest treasures are our children." Over the last two decades, beginning with a paper written by Strauss and Lehtenen in 1947, we have become aware that in our school system, locked in with the middle-of-the-road approach, there are at least 10 percent of the school population who have specified learning disabilities.

CHILDREN NOT MENTALLY RETARDED

These children are not mentally retarded; they have average and in many cases, better than average, intelligence, but they are not able to apply it because of specific defects in perception or cognition.

These children are usually overactive. They are often restless in the schoolroom, and have a short attention span. They may be impulsive or emotionally labile. Many of these children have a marked confusion in left- and righthandedness. Dominance seems to be confused in some.

They are literally lost in the rigid pathways of most of our schools, in which attention is directed at the child in the middle, and very little, if at all, toward the children who have a specific disability of this kind.

Such a condition may or may not be due to brain damage.

I would like to point out one other sad commentary in this regard. For a period of 3 years there were 41 suicides in the New Jersey school

systems, and it is estimated that for every successful suicide, there are nine others who attempt it.

In retrospect, it was found that many of these were in this particular group of children who had had great difficulty to adapt themselves to the learning process in the school.

We must not continue to neglect this group of children with a special need. Here again is an area of research in which the speech therapist, the computer specialist, and our associates in eye and ear research can be of great help to us.

Senator HILL. We haven't done much up to date, have we, Doctor?

Dr. KANE. There has been a tremendous waste and only a limited direct effort made at attacking this problem.

I would like to conclude at this point, Mr. Chairman, by indicating again my pleasure in reappearing before you and hoping that these topics which I brought to your attention will stimulate you to urge your committee to support the institute as we have recommended this year.

Thank you very much.

Senator HILL. I want to thank you for your statement. We appreciate it deeply.

STATEMENT OF JOHN STIRLING MEYER, M.D., PROFESSOR AND CHAIRMAN, DEPARTMENT OF NEUROLOGY, WAYNE STATE UNIVERSITY, DETROIT, MICH.

NEED FOR TRAINING MORE MEDICAL STUDENTS

Senator HILL. Who would like to be next? Doctor?

Dr. Meyer.

Dr. MEYER. Mr. Chairman and members of the committee.

It is a pleasure to appear before you and your committee again.

I am John Stirling Meyer, M.D., professor and chairman, department of neurology, Wayne State University, Detroit, Mich.

First, I would like to refer to the needs for training more medical students.

Senator HILL. I think that is a good subject.

Dr. MEYER. We are all aware of the shortage of physicians in this country, but as Dr. Farber has said, the recommendations in the President's budget are inadequate. We need new medical schools as well as expansion of all medical schools to increase enrollment of medical students, and I hope that funds will be made available for new facilities so greatly needed.

I appear before you as a citizen-witness in respect to the needs of the National Institute of Neurological Diseases and Blindness.

AREAS OF CONCERN

I am a neurologist, a medical specialist concerned with diseases of the brain, the nerves to the eye, the functioning of the intellect, and disorders of nerves, muscles, and the spinal cord.

One of these disorders is stroke, the third most common killer in the United States and probably the leading disabler. Others include such common disabling and killing diseases as brain tumor, which

was also referred to by Dr. Lee Clark in his statement on cancer, virus disorders and infections of the brain, Parkinson's disease, multiple sclerosis, muscular dystrophy, epilepsy, cerebral palsy, mental retardation, head injury, the problems of paraplegia, and many other handicapping disorders affecting vision, speech, and hearing. The Director of NINDB, Dr. Richard Masland, has already defined the enormous economic burden of these diseases.

To begin with, I would like to endorse the citizens' budget proposed by Dr. Kane, but would like to emphasize certain national health needs as I see them, Mr. Chairman.

TRAINING PROGRAMS

In order to carry out a program of patient care, research, and prevention, as well as the needed teaching in this specialty, a large manpower reserve of trained clinical neurologists and neuroscientists is necessary. This need is being met, to some degree by the training programs in clinical neurology and the neurological sciences that are supported by the Institute. When the NINDB was created, there was a tremendous shortage of neurologists. There is still a shortage, but the results of the training programs supported by the NINDB have been significant.

For example, in the past 4 years, from 1963 to 1967, there has been a 43-percent increase in the total number of physicians specializing in neurology, an increase of 2,772 to almost 4,000, or a gain of 1,183 doctors. The increase in Board certified specialists has gone up 23 percent in the last 4 years.

The training programs supported by the NINDB also provide training for neurosurgeons, ophthalmologists, and otolaryngologists. In spite of this training, a critical manpower shortage still exists in all these specialties dealing with the neurological and sensory disorders.

INCREASE IN TRAINED PHYSICIANS

However, as a result of the training programs supported by the NINDB each of these specialties has shown an increase in the number of trained physicians in the past 4 years.

Neurosurgery has increased 39 percent. Ophthalmology, which deals with all the problems of blindness and eye diseases, has shown a 25-percent increase.

Otolaryngology, the specialty that deals with disorders of the ear, nose, and throat, has shown a 23-percent increase.

These increases are proof that the taxpayer's investment in the training programs of the NINDB is paying off. Although these training programs are expensive, they are well worth the investment, they must not be reduced. They must be preserved and developed further to meet the tremendous health needs of the Nation.

Senator HILL. That is a pretty favorable report, isn't it?

Dr. MEYER. Well, sir, the President's budget does not allow for any advances. In fact, there is not even a cost of living increase as it stands, and this training program is absolutely vital to help this country.

Senator HILL. In other words, you have to keep going forward.

Dr. MEYER. We have got to expand, sir, particularly when we are increasing our medical school and training students.

BENEFITS PROVIDED BY TRAINING PROGRAM

What exactly does a training program provide?

After a young doctor has completed 4 years of college, 4 years of medical school, and 1 year of internship, the training program provides him with a stipend of about \$5,500 to \$6,000 a year while he is learning the essentials of his medical specialty. The average time that he must spend in this specialty is 3 years, and it is customary to give such trainee a promotion in salary of about \$500 a year.

The training program also provides funds for part of the faculty to teach these men patient care in the various universities and community hospitals. These men are the backbone of the postgraduate medical educational system—a system which has proved to be the best in the world.

NATIONAL CONFERENCE SPONSORED BY NINDB

In the fall of 1966, a national conference on education in the neurological sciences was sponsored by the NINDB and the two leading neurological societies, the American Neurological Association and the American Academy of Neurology. At this conference, Dr. Aura Severinghaus reported the results of a three-year summary of the needs for training in neurölogy and the neurological sciences. This excellent study reported the advances made through NINDB-supported training and stressed the increasing needs for training in this area in the years to come. Guidelines were set up for neurological education all the way from medical school through internship and residency training, as well as research training in the neurological sciences.

INCREASE IN RESEARCH SPECIALISTS AND TEACHERS

In addition to the increase in practicing neurologists, there has also been a gratifying increase in research specialists and teachers in this important area. This increase has made possible a greatly expanded research program dealing with the prevention of some of these previously hopeless disorders.

For example, the number of trained neurologists now in laboratory or full-time research has doubled in the past few years.

Senator HILL. It has doubled in the past few years?

Dr. MEYER. Yes, sir.

As a result of the Institute's support, we have been able to set up some new centers and training programs all over the United States, particularly in areas in which facilities did not previously exist.

SHORT OF NEUROLOGISTS

There is still a great shortage of neurologists. If one neurologist, were available for a population of 150,000, including children, he would have to take care of 4,000 patient visits per year and about 80 patient visits per week. However, there are only 13 States and the District of Columbia which meet even this minimum requirement.

With the explosion of modern technical skills and new knowledge, the diagnostic facilities and new treatment now available to the neurologist have increased enormously in the past few years.

As a result of the recent conference on neurological education, guidelines have been established for rapidly and efficiently transmitting this knowledge to the young men in training.

SUPPORT OF SPECIAL TRAINEES

I should point out to this committee, Mr. Chairman, that these NINDB training programs also support special trainees in highly technical areas. For example, in the past 2 years, a program for stroke trainees has been mounted in this country, supported by the NINDB. As a result, these trainees are already teaching practicing physicians how to provide adequate care for stroke patients

LABORATORY ON NEUROLOGICAL CONTROL

I have been emphasizing the continuing support which the NINDB will need in the future for its training program. Now I would like to turn your attention to plans, now underway, for an exciting new development in medicine—a laboratory concerned with neurological control.

In this laboratory, at the Institute's Bethesda facilities, techniques will be studied for the development of new means of control of movement for the physically handicapped and paralyzed and for such new mechanisms as possibly an artificial eye, or hearing device for the deaf. Advances in electronics now make it possible to convert the electrical energy of a nerve impulse coming from the brain to restore the paralyzed functions of limbs or move artificial limbs.

STROKE PROGRAM

I would also like to review briefly NINDB's stroke program. As you know, I served as chairman of the Stroke Subcommittee of the President's Commission on Heart Disease, Cancer, and Stroke. In addition to a basic core program in stroke at NINDB, there are now 17 active stroke centers located in major population centers around the country.

Funds should be provided to support the existing centers and to add additional stroke centers in order to obtain a better geographical coverage.

With these centers, research is being conducted on improved methods of treatment and prevention. In fact, we are now on the threshold of new developments in both treatment and prevention. The immediate need is for funds to carry out cooperative trials on a number of drugs with a large group of patients. I urge that an additional \$3 million be appropriated for trials of new drugs in the treatment of stroke and related disorders of the brain, including testing of drugs at the same time for Parkinson's disease, epilepsy, and multiple sclerosis.

HYPERTENSION CONTROL STUDY

A cooperative study is concerned with the effects of the control of high blood pressure on patients suffering from stroke. In my own

laboratories we have already shown that cerebral blood flow in stroke patients is actually improved when hypertension and high blood pressure are controlled by this new drug.

There are several other centers which are screening methods of treatment by scientific measurements of cerebral flow and metabolism before and after various trials of treatment. A small pilot study of this type has been underway for the past 2 years from NINDB. This type of program should be extended.

Senator HILL. How is that study coming along?

Dr. MEYER. The hypertension control study now has six participating institutions and has a well-established pilot program that has been going for 2 years. It needs to be expanded, but to do so it requires additional funds.

Senator HILL. I understand that. The wheels don't run without grease, do they?

Dr. MEYER. No, sir; they do not.

I am going to say some things that you know only too well.

Senator HILL. Go right ahead.

As you know the term "stroke" refers to a loss of brain function resulting from an interference with blood supply to the brain. Recent studies from our stroke centers have shown that about 75 percent of patients have warning episodes before some catastrophic paralysis occurs. Diagnosis can be made by arteriography and, in some cases, surgical reconstruction of diseased vessels is possible. In others, medical treatment can be lifesaving and certainly, in some cases, complete recovery can result.

EPIDEMIOLOGICAL SURVEY OF STROKE

In addition to research in medical and surgical treatment and in prevention of stroke, the NINDB is also supporting an epidemiological survey of stroke. In this study 69 communities will provide incidence of the true morbidity and mortality of stroke, information which is at present unavailable.

From what I have told this committee, I am sure that it is apparent that cooperative studies supported by the NINDB have been very important in the advance of our knowledge in the stroke area.

SUPPORT OF COOPERATIVE STUDIES

I have already made reference to the cooperative study on the control of hypertension in stroke; previously, cooperative studies on anti-coagulant therapy have been supported, and, in addition, the NINDB is supporting a cooperative study of intracranial aneurysms and acute subarachnoid hemorrhage. This cooperative study includes 24 universities and has been supported since 1958.

As a result of the findings of this group, it was found that ruptured aneurysm was the most common cause of subarachnoid hemorrhage and was responsible for 51 percent. Furthermore, this type of cerebral hemorrhage occurs in a younger group, reaching a peak incidence between the ages of 50 to 54 years of age.

Senator HILL. That is a little surprising, isn't it?

Dr. MEYER. Not really, but a lot of people think stroke is a problem of old age.

Senator HILL. Yes.

Dr. MEYER. In 92 percent of the cases, diagnosis can be made by arteriography. Some forms of therapy have proved to be effective in certain types of cases.

LACK OF MANPOWER

There is still a sad lack of manpower for research and clinical work in the field of stroke, and it is hoped that the training programs on stroke supported by NINDB will close the gap. Additional people will be required if there is to be the right sort of activities in all communities across this country, including, for example, your own—including Memorial Center in Birmingham, Ala., which has a wonderful stroke center.

RECOMMENDATIONS

In summary, Mr. Chairman, I have reviewed for your committee areas of utmost importance that I believe must be supported if NINDB is to continue to give leadership in the neurological and sensory area.

Finally I have reviewed with you the needs in the area of my own special interest—cerebrovascular disease, and I have asked that you continue to support the research and training activities in this field, along with the support of centers for excellent treatment of stroke.

Thank you, Mr. Chairman, for the privilege of appearing before you.

Senator HILL. Thank you for that statement.

(The material follows:)

Mr. Chairman and Members of the Committee, it is a pleasure to appear before you and your committee once again.

I am John Stirling Meyer, M.D., Professor and Chairman, Department of Neurology, Wayne State University, Detroit, Michigan. First, I would like to refer to the need for training more medical students. We are all aware of the shortage of physicians in this country and yet, as Dr. Farber has said the appropriations recommended by the President's budget is inadequate for Health Research Construction Facilities. We need new medical schools as well as expansion of already existing medical schools to increase the enrollment of medical students and I hope that the funds available for new construction facilities, so greatly needed, will be made available. I appear before you as a Citizens' witness in behalf of the needs of the National Institute of Neurological Diseases and Blindness. Hereafter, I will refer to the institute as NINDB. I am a neurologist, a medical specialist concerned with diseases of the brain, the nerves to the eye, the functioning of the intellect, and disorders of nerves, muscles, and spinal cord. One of these disorders is stroke, the third most common killer in the United States and probably the leading disabling. Others include such common disabling and killing diseases as brain tumor (which was also referred to by Dr. Lee Clark in the cancer statement), virus and bacterial infection of the brain, Parkinson's disease, multiple sclerosis, muscular dystrophy, epilepsy, cerebral palsy, mental retardation, head injury, the problems of paraplegia, and many other handicapping disorders affecting vision, speech, and hearing. The Director of the NINDB, Dr. Richard Masland, has already defined the enormous economic burden of these diseases.

To begin with I would like to endorse the citizens' budget proposed by Dr. Kane but would like to emphasize certain special national health needs as I see them.

In order to carry out a program of patient care, research, and prevention, as well as the needed teaching in this specialty, a large manpower reserve of trained clinical neurologists and neuroscientists is necessary. This need is being met, to some degree, by the training programs in clinical neurology and the neurological sciences that are supported by the Institute. When the NINDB was created, there was a shortage of neurologists. There is still a shortage, but the results of the training programs supported by the NINDB have been significant.

For example, in the past four years from 1963 to 1967, there has been a 43 percent increase in the total number of physicians specializing in neurology, an increase from 2,772 to almost 4,000, a gain of 1,183 doctors. The increase in Board-certified specialists has gone up 23 percent in the last four years.

The training programs supported by the NINDB also provide training for neurosurgeons, ophthalmologists, and otolaryngologists. A critical manpower shortage exists in all these specialties dealing with the neurological and sensory disorders. However, as a result of the training programs supported by the NINDB, each of these specialties has shown an increase in the number of trained physicians in the past four years. Neurosurgery has increased 39 percent. Ophthalmology, which deals with all the problems of blindness and eye diseases, has shown a 25 percent increase. Otolaryngology, the specialty that deals with disorders of the ear, nose, and throat, has shown a 23 percent increase. These increases are proof that the taxpayer's investment in the training program of the National Institute of Neurological Diseases and Blindness is paying off. Although these training programs are expensive, they are well worth the investment. They must not be reduced. They must be preserved and developed further to meet the tremendous health needs of the Nation.

What exactly does a training program provide? After a young doctor has completed four years of college, four years of medical school, and one year of internship, the training program provides him a stipend of about \$5,500 a year while he is learning the detailed knowledge of his medical specialty. The average time that he must spend in this specialty is three years, and it is customary to give each trainee a promotion in salary of \$500 a year. The training program also provides funds for part of the facility to teach these men patient care in the various universities and community hospitals. These men are the backbone of the postgraduate medical educational system—a system which has proved to be the best in the world.

In the fall of 1966, a national conference on education in the neurological sciences was sponsored jointly by the NINDB and the two leading neurological societies, the American Neurological Association and the American Academy of Neurology. At this conference, Dr. Aura Severinghaus reported the results of a three-year summary of the needs for research and training in neurology and the neurological sciences. This excellent study reported the advances made through NINDB-supported training and stressed the increasing needs for training in this area in the years to come. Guidelines were set up for neurological education all the way from medical school through internship and residency training, as well as research training in the neurological sciences.

In addition to the increase in practicing neurologists, there has also been a gratifying increase in research specialists and teachers in this important area. This increase has made possible a greatly expanded research program dealing with the prevention of some of these previously hopeless disorders. For example, the number of trained neurologists now in laboratory or full-time research has doubled in the past few years. As a result of the Institute's support, we have been able to setup new centers and training programs all over the United States, particularly in areas in which facilities did not previously exist.

There is still a great shortage of neurologists. If one neurologist were available for a population of 150,000, including children, he would have to take care of 4,000 patient visits per year and about 80 patients visits per week. However, there are only 13 States and the District of Columbia which meet even this minimum requirement.

With the explosion of modern technical skills and new knowledge, the diagnostic facilities and new treatment now available to the neurologist have increased enormously in the past few years. As a result of the recent conference on neurological education, guidelines have been well established for rapidly and efficiently transmitting this knowledge to the young men in training.

I should point out to this Committee, Mr. Chairman, that these NINDB training programs also support special trainees in highly technical areas. For example, in the past two years a program for stroke trainees has been mounted in this country, supported by the NINDB. As a result, these trainees are already teaching practicing physicians now to provide adequate care for stroke patients.

I have been emphasizing the continuing support which the NINDB will need in the future for its training programs. Now I would like to turn your attention to plans, now under way, for an exciting new development in medicine—a laboratory of neurological control. In this laboratory, at the Institute's Be-

theses facilities, techniques will be studied for the development of new means of control of movement for the physically handicapped and paralyzed and for such new mechanisms as an artificial eye, or hearing device for the deaf. Advances in electronics now make it possible to convert the electrical energy of a nerve impulse coming from the brain to restore the paralyzed functions of limbs or move artificial limbs.

I would also like to review briefly NINDB's stroke program. As you know, I served as chairman of the Stroke Subcommittee of the President's Commission on Heart Disease, Cancer and Stroke. In addition to a basic core program in stroke at the NINDB, there are now 17 active stroke centers located in major population centers around the country. Funds should be provided to support the existing centers and to add additional stroke centers in order to obtain a better geographical coverage. Within these centers, research is being conducted on improved methods of treatment and prevention of stroke. Already significant advances have been made which indicate that prevention of stroke is possible. In fact, we are now on the threshold of new developments in both treatment and prevention. The immediate need is for funds to carry out cooperative trials on a number of drugs with a large group of patients. I suggest that an additional \$3 million be appropriated for trials of new drugs in the treatment of stroke and related disorders of the brain—including testing of drug treatments for Parkinson's Disease, epilepsy and multiple sclerosis.

A cooperative study is concerned with the effects of the control of high blood pressure on patients suffering from stroke. In my own laboratories we have already shown that cerebral blood flow in stroke patients is actually improved when hypertension and high blood pressure are controlled by a new drug. There are several other centers which are screening methods of treatment by scientific measurements of cerebral flow and metabolism before and after various trials of treatment. A small pilot study of this type has been under way for the past two years with support from NINDB. This type of program should be extended.

As you know, the term "stroke" refers to a loss of brain function resulting from an interference with blood supply to the brain. Recent studies from our stroke centers have shown that about 75 percent of patients have warning episodes before some catastrophic paralysis occurs. Diagnosis can be made by arteriography and, in some cases, surgical reconstruction of diseased vessels is possible. In others, medical treatment can be life-saving and certainly, in some cases, complete recovery can result.

In addition to research in medical and surgical treatment, and in prevention of stroke, the NINDB is also supporting an epidemiological survey of stroke. In this study, 69 communities will provide incidence of the morbidity and mortality of stroke. Also, extensive information about associated diseases and precipitating factors will provide even more efficient prevention of this disorder.

From what I have told this Committee, I am sure that it is apparent that cooperative studies supported by the NINDB have been very important in the advance of our knowledge in the stroke area. I have already made reference to the cooperative study on the control of hypertension in stroke. Previously, cooperative studies on anticoagulant therapy have been supported, and, in addition, the NINDB is supporting a cooperative study of intracranial aneurysms and acute subarachnoid hemorrhage. This cooperative study includes 24 universities and has been supported since 1958. As a result of the findings of this group, it was found that ruptured aneurysm was the most common cause of subarachnoid hemorrhage and was responsible for 51 percent. Furthermore, this type of cerebral hemorrhage occurs in a younger group, reaching a peak incidence between the ages of 50 to 54 years of age. In 92 percent of the cases, diagnosis can be made by arteriography. Some forms of therapy have proved to be effective in certain types of cases.

Contrary to public opinion, occlusive cerebrovascular disease or stroke due to blockage of vessels or rupture of them is a disease of people in the most effective years of life, the highest incidence occurring between the ages of 55 and 65.

Research in stroke by NINDB is carefully correlated with the activities of the National Heart Institute through a joint council subcommittee. I am a member of that committee and can assure you that the expenditures of effort and finances are not duplicated.

There is still a sad lack of manpower for research and clinical work in the field of stroke, and it is hoped that the training programs on stroke supported by the NINDB will close the gap. If there are to be the right sort of activities in

all communities across this country—including, for example, your own medical center in Birmingham, Alabama as you know well, Mr. Chairman—we must provide adequately trained manpower to meet these needs. These stroke centers provide, if you will, the brood mares from which the race horses and work horses of the future will be provided. The men trained in these programs will staff the Regional Medical Program in the stroke area across the country.

In summary, Mr. Chairman, I have reviewed for your Committee areas of utmost importance that I believe must be supported if NINDB is to continue to give leadership in the neurological and sensory area. I have emphasized to you that the key, and possibly the most important single activity of the NINDB, has been support of the training programs. I have also given you some astounding figures of the effectiveness of this program in the past few years. As a graduate of the U.S. Public Health Service training program in neurology myself, I can tell you from personal experience that it is highly effective. I have also discussed with you the possibility of developing new techniques of neurological control for artificial organs and control of movement in absent or paralyzed limbs. Finally, I have reviewed with you the needs in the area of my own special interest, cerebrovascular disease, and I have asked that you continue to support the research and training activities in this field, along with the support of centers for excellent treatment of stroke.

Thank you.

STATEMENT OF DR. A. EDWARD MAUMENEE, CHAIRMAN, DEPARTMENT OF OPHTHALMOLOGY, JOHNS HOPKINS UNIVERSITY, SCHOOL OF MEDICINE

PREPARED STATEMENT

Senator HILL. Dr. Maumenee.

Dr. MAUMENEE. Mr. Chairman, it is a pleasure to appear before you today, and I am delighted that your arm, which has held up so much research in medicine, has healed.

Senator HILL. Off the record.

(Discussion off the record.)

Senator HILL. It is good to have you back here with us.

Dr. MAUMENEE. Thank you, sir.

I have my written report, sir, which I would like to introduce.

Senator HILL. We will have that appear in full in the record.

(The statement follows:)

Mr. Chairman and members of the committee, I am Dr. A. Edward Maumenee. I am Chairman of the Department of Ophthalmology at The Johns Hopkins University School of Medicine and Director of The Wilmer Institute and the Alan C. Woods Research Laboratories at that institution. Within the past several years I have served as Chairman of the Section on Ophthalmology of the American Medical Association and President of the Association of University Professors of Ophthalmology, in addition to membership in various other professional groups. I mention these only to indicate to you that I have broad relationships with, and experience in, the clinical, research, and teaching aspects of ophthalmology, and that I speak with current knowledge of the manifold problems that beset this specialty and which must be dealt with realistically if we are to move ahead in the prevention of blindness.

It is obvious to all of us in the profession that much more effective action must be taken than we have been able to initiate in the past, due in part to the lack of adequate funds for visual research and training. I would preface my remarks by stating that without the splendid interest and financial assistance of this Committee and the Appropriations Committee of the House of Representatives in recent years, it would not be possible for me to appear before you today and say that we are now ready for a concerted nationwide effort to find and eradicate some of the causes of blinding diseases. As recently as 1950 there were only five full-time investigators in eye research in the entire country.

Through the establishment of the National Institute of Neurological Diseases and Blindness within the National Institutes of Health, and the annual allocation of Federal funds to the field of visual research, we can point with considerable pride to a tremendous growth of scientific interest in blindness prevention. There is now among our medical institutions a splendid nucleus of capable, imaginative, and dedicated ophthalmic investigators, many of them young men, who are anxious to move out toward the new goals that they have set for themselves.

I must emphasize, however, that until now we have been working only upon the foundations. We have established the nucleus and created the potential. The time has come to build, to build programs that will put us well on the way to solving the fundamental problems of visual failure, so that we may save the sight of millions of Americans who will otherwise be forced to live with severe visual disability. We are ready to build at this moment. But we do not have enough manpower, enough laboratory space, enough equipment, and certainly not enough money to realize the magnificent opportunity that confronts us. I appear before you today to urgently plead for increases in the Federal appropriation well beyond those which served an initial purpose in the past, but which cannot sustain the full-scale effort of which we are now capable.

I ask you first to consider the need in terms of the number of human beings whose lives may be affected by your action, and the extent of their disability. Both as a person and as a physician, I am deeply concerned with the fact that the problem of blindness is not a static thing, which always reaches into a certain, unchanging proportion of our population. We must face the fact that blindness in this country is increasing, year after year, and at an alarming rate that is far out of proportion to our population growth. In the two decades between 1940 and 1960, while our general population increased by 36 per cent, the blind population increased by 76 per cent. There are now somewhere between half a million and more than a million blind persons in the United States, depending upon which definition of blindness we choose to use. Among these, hundreds of thousands live in total darkness—the complete absence of light. Others can sense the presence of light, but have no useful vision. In addition to these, there are three and one-half million Americans who suffer from serious, permanent, non-correctable visual defects. There are one and a half million who are blind in one eye, with no depth perception and living in constant jeopardy of total loss of sight should the good eye be damaged by disease or injury.

With an extension of the human life span, our inability to prevent diseases of the eye will present the aged with the unhappy prospect of living their latter years in darkness. By age 60, some type of lenticular opacity (cataract) is present in 60 per cent of our people; and by age 80, the incidence is almost 100 per cent. Fortunately, these lens opacities are not always in the line of vision so they do not impair sight, but the causes of these opacities are the same as those which require cataract extraction. Increasing blindness is by no means restricted to the aged. We are now saving the lives of infants whose physical weaknesses will be manifested in a host of visually disabling conditions. Eighty per cent of all blindness is the result of diseases whose causes are unknown to science.

When we think in terms of vision, rather than blindness, and the needs of our people in terms of preserving their sight, the figures are astronomical. Some 90 million people—almost half our population—have some ocular malfunction. More than 10 per cent of all patients seen in our medical institutions are eye patients. Reports indicate that some 127,000 major eye operative procedures were performed in the past year at only 35 of our medical school hospitals. Millions of diabetics whose lives are now being prolonged through the introduction of insulin are threatened by diabetic retinopathy, which now causes 15 per cent of all new blindness, where it once was the causative factor in only 1 per cent of newly reported cases. We cannot yet prevent these retinopathies. We do not know the causes of cataract and glaucoma, the two major causes of visual loss in the United States.

We should not be surprised, then, that a recent Gallup public opinion survey, sponsored by Research to Prevent Blindness, Inc., indicated that, with the single exception of cancer, the American people fear blindness more than any other physical affliction. Nor should it amaze us that the financial cost of blindness to the nation, in terms of care and treatment for those already blind, exceeds one billion dollars each year.

There is no question, then, that we are dealing with a major health problem, and that we have been late in giving adequate thought to the means of solving

it. Until the inception of the National Institutes of Health and the subsequent establishment of the National Institute of Neurological Diseases and Blindness, there was virtually no governmental or private effort to support the necessary scientific research to prevent this terrible waste of human and financial resources. The results that have been achieved with the relatively small Federal funds allocated to vision over the past five to ten years have fully justified this investment. But, more than that, I believe these results should indicate to this Committee and to the Congress that here is an area of medical science that is coming alive with activity and whose potential is so great as to warrant the allocation of vastly larger amounts to finance the natural development of the programs that have been generated.

With your permission, I would like to review briefly some of these advances, so that you may know where we are and where we hope to go. The leading cause of blindness in the United States today is cataract. While we do not know what causes most cataracts, and cannot prevent them from occurring, we have been perfecting our techniques for the surgical removal of the cataractous lens to the point where this has become a safe and highly successful procedure. We have learned that opaque lenses can be successfully aspirated through a small needle in patients up to the age of 30 years. We have discovered that an enzyme called alpha-chymotrypsin will dissolve the attachments of the cataractous lens and permit its easy removal, thus increasing the safety of surgery. Cryosurgery, a freezing technique, is among the newly-developed techniques that are increasing our capacity to extract cataracts with minimal damage and discomfort to the patient. We remain acutely aware, however, that surgery cannot be considered an adequate solution to disease problems. We must learn a great deal more than we now know if we are to find the causes of cataracts and prevent them from forming. Our goals in cataract research must involve knowledge of the aging process of human cells, the mechanism of membrane transport systems, and the biochemistry of the metabolism of cells. Meanwhile, we must consider surgery a necessary expedient, but never an ultimate answer, especially when we are faced with an ever-increasing population of the aged who are justifiably demanding that their health needs be met.

Glaucoma is the second leading cause of blindness, often not diagnosed until the optic nerve has been irreparably damaged. It is estimated that some two million Americans have glaucoma, and about half of them are not aware of it. While we have discovered some new medical methods of therapy which have greatly reduced the need for surgery in glaucoma, it is obvious that much must be done in the area of detection and prevention. In recent years we have learned how to detect some of the prodromal symptoms of this condition, and that it occurs in about 20 percent of the immediate family of an affected person. But the exact inheritance pattern is not clear. Present research is deeply involved in exploring the basic mechanism of aqueous secretion and absorption, which is still poorly understood despite the fact that many fine physiologists, biochemists, and biomathematicians are hard at work on the glaucoma problem.

We have learned to manage retinal detachments with a high degree of success over the past several years. This condition a short time ago was an almost certain prelude to blindness, but we have greatly reduced the numbers who suffer loss of vision. Among recent advances in retinal detachments are the application of plastic bands to encircle the globe of the eye, the use of photocoagulation or the laser beam, and the application of cryosurgical techniques. We look forward to further advances in surgical techniques to improve the percentage of operative cures. But again, this is not the ultimate objective, for we are confident that many retinal detachments could be prevented if we had a greater knowledge of the biochemistry and physical properties of the jelly-like material, or vitreous body, in the eye. Teams of scientists are working on these problems today, and their work invites much greater support than they are presently receiving.

Uveitis is a major ocular disease that is poorly understood by ophthalmologists and is practically unknown by the general public, although it accounts for a good deal of visual loss and blindness. Uveitis differs from purulent abscesses in that it does not respond to presently known antibiotics. It may well be a form of auto-immunity, and comparable in some respects to rheumatoid arthritis and some types of kidney and thyroid disease. In recent years it has been discovered that the parasite, *toxoplasma gondii*, is responsible for a number of cases of

uveitis in which the posterior part of the eye is involved. Unfortunately, we have no adequate medication for the treatment of this parasite. Advances in this field will depend on increased investigation in the areas of immunology, microbiology, parasitology and virology, as well as pharmacology.

It has been said that the eye is the window to the body. There is probably no greater evidence of this than in the field of diabetes, where the ophthalmologist may be the first to detect the presence of this disease which so often progresses for many years before it is diagnosed. Diabetic retinopathy is one of the major complications of diabetes, producing lesions in the vascular system involving all of the smaller blood vessels in the body, often leading to blindness, kidney disease, heart disease, and stroke. It is these changes in the blood vessels of the eye that permit the ophthalmologist to diagnose diabetes. Unfortunately, the development of controls for this disease, with a reduction of mortality, has not had a similar influence upon the course of retinopathy. Ophthalmic investigators are therefore becoming increasingly involved in exploring the nature of changes in the vascular system and the retinal blood vessels. This research has been hampered by the lack of a good experimental model in the lower animals. Recently we have found that dogs with spontaneous diabetes, and possibly those with induced disease, undergo vascular changes that are identical to those found in man. It is now hoped that with the cooperation of veterinarians, endocrinologists, electron-microscopists, and biochemists, we may eventually find the basic cause of these vascular changes and thus prevent blindness and other lesions that lead to early death of the juvenile diabetic patient.

While I have dwelt at some length upon a few of the problems that concern us in this explosive field of investigative ophthalmology, I can assure you that I have merely skimmed the surface of the problems and the opportunities that we are now attempting to meet. Such conditions as macular degeneration, tumors of the eye, strabismus or crossed eyes, corneal transparency and the homograft reaction, vitreous infections of the eye, and the newly-found anti-viral agents have not been mentioned for the sake of brevity.

To do what must be done in the immediate future we need researchers, we need teachers, we need laboratory space, we need equipment, and we need money—very much more than is now being allocated to this important work. The total allocation to vision research and research training within the National Institute of Neurological Diseases and Blindness in the past fiscal year was in the neighborhood of \$18 million. I ask you to reflect upon the extent of this investment in the light of our annual cost of one billion dollars for care and treatment of those already blind.

In endorsing the Citizens' Recommendation for fiscal year 1968, I would ask that much consideration be given to the expansion of the training program of the National Institute of Neurological Diseases and Blindness, including the establishment of Career Teacher-Investigator Awards in ophthalmology for the purpose of attracting full-time people to academic work. Such awards might guarantee remuneration over a specific period of time, thus providing incentive to the young ophthalmologist who might otherwise be lost to private practice.

I have mentioned that more than 10 percent of all patients treated at our large medical centers are eye patients. With the advent of Medicare, we know that this percentage will increase. Yet a recent report indicated that we are training only 3.3 percent of our physicians for ophthalmology. During the past five years, almost 98 percent of all approved residencies in ophthalmology have been filled, while in other fields the percentages of positions filled ranges from 46 to 91 percent. This would indicate that a residency in ophthalmology is one of the most desirable positions in the specialties. In spite of this desire for ophthalmic training, the total number of full-time positions in this specialty has not increased at a rate comparable to other fields. We will not begin attracting the necessary full-time manpower until we begin to give all aspects of the vision problem the kind of attention, interest, and financial support that we give to other areas in which widespread and extremely serious health problems are being acted upon with intelligence and vigor.

It is therefore my urgent request that this Committee give full support to Citizens' Recommendation that \$36,600,000 be allocated to vision research and research training, within the total request for a \$146,000,000 appropriation to the National Institute of Neurological Diseases and Blindness for fiscal year 1968. The following is a financial breakdown of the funds requested for vision research and research training:

Intramural	\$3, 000, 000
Extramural	18, 782, 000
<hr/>	
Total research grants.....	21, 782, 000
Training grants, traineeships, and fellowships.....	9, 000, 000
Clinical centers.....	3, 000, 000
Institutional grants.....	2, 818, 000
<hr/>	
Total	36, 600, 000

I am very grateful to you for permitting me to testify before you today. I sincerely fear that if research and research training opportunities are not permitted to grow, we will lose both the opportunities for valuable research today, and the scientists in this rapidly developing field who must do the research and training in the future. The health and happiness of millions of Americans are involved in the decisions of this Committee. I am confident that you will act upon this urgent request with all the wisdom you have shown in promoting the total health and welfare of our people. Thank you.

COST OF AID TO BLIND

Dr. MAUMENEE. I would now like to make some additional comments.

Secretary Gardner's report to the House this year on the HEW budget stated that of all disorders which afflict man, probably none causes a greater problem than blindness, and he went on to say that in a recent survey, next to cancer, citizens of the United States fear blindness more than any other handicap.

He also pointed out that the cost to the Nation for aid to the blind was something in the neighborhood of a billion dollars a year. If you then extrapolate the fact that in surveys it has been shown that in large clinics and universities about 10 percent of the patients come there for eye problems, you can see that the cost to this Nation for the care of ocular problems amounts up to somewhere, certainly \$5 billion, or better.

INCREASE IN BLINDNESS

In spite of this, and this is in my testimony, from 1940 to 1966, while the population of the country had increased some 36 percent, blindness increased 76 percent.

Senator HILL. Seventy-six percent?

Dr. MAUMENEE. Yes. This is partly because of the retrolental fibroplasia epidemic which occurred in the 1940's—

Senator HILL. Putting children in oxygen tents?

Dr. MAUMENEE. Yes, sir; and with funds provided by your committee, this problem was solved, and saved the Nation billions of dollars.

Senator HILL. That oxygen treatment was a terrible blunder.

Dr. MAUMENEE. Yes, it was. It is a problem that still needs attention, because it is shown by pediatricians that they can have children survive by giving them oxygen. It is a problem of how much oxygen you can give and not cause blindness and still prevent the other difficulties.

DIABETES CONTRIBUTES TO BLINDNESS

Most of the areas your funds have helped in are clinical care. We have improved cataract, and we have learned how to cure a higher percentage of retina detachments. Diabetes is probably contributing

a good deal to blindness in this country, because it is now well shown that the vascular changes associated with diabetes are not directly related to the high blood sugar and we don't know—

Senator HILL. We don't know what it is, do we?

Mr. MAUMENEE. No, sir; we don't. Our research has been limited because it must be done on man. We don't have an animal which develops this disease.

However, recently we were able to show that diabetes in dogs produced the same changes in the retina and the kidney that occur in man, and we hope we can encourage veterinarian schools to raise colonies of spontaneously diabetic dogs, so we can have an animal on which to work.

It has been shown recently that rats, kept in constant illumination, without letting them get into any shadows, go blind.

Likewise, using certain dye substances, we found that in certain type of vascular disease we can find leaks, and we are able by using the laser beam, to seal those leaks.

WORK OF DR. LORTON SMITH

One of the most exciting things, is some work that Dr. Lorton Smith at the University of Miami has been doing.

He has been taping the anterior chamber of the eye and finding spirochetes in patients who have perfectly normal eyes, with only small scars from previous syphilis. He has already found spirochetes in the spinal fluid of persons with evidence of having had syphilis in the past who have apparently been adequately treated with antibiotics.

This work has been confirmed in Boston.

All this has been done with the support you have given to us.

PREPARATION OF CITIZENS' BUDGET

This year I would again like to support the citizens' budget. Two years ago someone on your committee, sir, asked: really, how did these citizens' budgets come about? Did we make them up by air?

Senator HILL. I remember that.

Dr. MAUMENEE. During the past 2 years, a special task force has been reviewing the national needs for ophthalmic research. Their report was presented to the Council of the NINDB in November, and it is now in the process of being printed. I have here a summary of the three large volumes in which we spell out in detail the planning program and budget that we think is necessary to fight the disorders of blindness, I would like to have this summary introduced into the record so that it is available.

Senator HILL. All right, sir.

TEACHING INVESTIGATOR GRANTS

Dr. MAUMENEE. We would like to get funds for three things in particular this year: the first is for teacher investigators.

We now have career research investigators in the field of NLRB, but one of our problems in ophthalmology is that in spite of the fact

that between 95 and 98 percent of all the available residencies are filled, in contrast to the other areas, where only 60 percent of the residencies are filled, we still have a tremendous shortage of ophthalmologists in this country. Because of this, the lure of private practice is so great and the income of ophthalmologist is so high, it is difficult to retain our well-trained men in the academic world where salaries are lower, and also where there is less security. We feel that one of the things that could be done to stop this is to have teacher-investigator grants, these would provide support for physicians to man our training programs and to conduct research.

I have talked this over with Dr. Masland many times, and he feels this would be a tremendous help in this field.

NEED FOR BUILDING FUNDS

The second is, of course, as Dr. Kane mentioned, the need for building funds. We need more funds for building to develop the programs, Ophthalmology got off to a late start, and still in many schools in the country there is only a token division of ophthalmology at the present time.

SUPPORT FOR RESEARCH

Finally, I would like to ask for continued support of the field of research, particularly for research centers, because blindness is not one disease. It is caused by a great number of problems.

It involves microbiology; the aging processes; retina detachments; cataracts; the biochemistry of membrane transports that is involved in the disease of glaucoma; corneal transplants; the field of immunology; as well as the tumors of the eye which Dr. Farber has mentioned to you in the past.

Thank you, Mr. Chairman.

Senator HILL. You always bring us a good satisfying statement. I am glad you come from Alabama. It is a good State.

Dr. MAUMENEE. It is a good State to be from and to go back to.

Senator HILL. I hope you come back someday, we can get a Maumenee Institute there. Let's you and I work to that end.

Dr. MAUMENEE. All right.

Senator HILL. All right. Thank you.

(The task force summary follows:)

BLINDNESS

Of all the disorders which afflict man, probably none causes greater problems than blindness. A recent survey shows that, next to cancer, people in the United States fear blindness more than any other handicap.

It is estimated that there are in the United States today 411,000 legally blind and 3,500,000 who have only partial vision. About half of the totally blind are not employed, and approximately 75 percent are 40 years of age and over. The National Health Survey estimates that one million people in the United States have visual impairment so severe that they cannot read a newspaper.

Federal payments to the blind amount to more than \$95 million annually. Based on limited figures from New York State and Massachusetts, it is estimated that payments for aid to the blind within the States total from \$600 million to \$900 million annually. It is thus quite probable that the annual bill for aid to the blind approaches \$1 billion, a figure frequently used though not authenticated.

2282 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Major causes of blindness and visual impairment include cataract, glaucoma, diabetic retinopathy, corneal scarring, uveitis, retinal detachment, tumors, amblyopia, and refractive anomalies.

Obligations for programs in blindness

[In thousands of dollars]

	1964	1965	1966	1967 estimate	1968 estimate
Office of Education:					
Educational improvement for the handicapped—	710	968	1,282	1,680	1,680
Title III—Elementary and secondary education—			28	54	100
Research and training—	50	49	38	50	71
NDEA Title VII—Educational media research—		16			
Educational improvement for the handicapped—					
Research—	53	103	136	135	240
Subtotal, Office of Education—	813	1,136	1,484	1,919	2,091
Vocational Rehabilitation Administration:					
Grants to States—	7,600	9,300	13,600	25,400	30,800
Research and demonstrations—	928	1,317	1,481	1,479	1,591
Research and training (special foreign currency					
program)—	451	532	174	281	521
Innovation grants—	125	215	180	150	150
Expansion grants—			122	450	550
Subtotal, Vocational Rehabilitation Adminis-					
tration—	9,104	11,364	15,557	27,760	33,612
Public Health Service:					
Chronic diseases—	606	357	378	610	80
National Institute of Neurological Diseases and					
Blindness—	12,821	14,342	16,449	18,208	20,728
Subtotal, Public Health Service—	13,427	14,699	16,827	18,818	20,808
Social Security Administration:					
Estimated benefit payment from trust funds:					
To blind persons—	21,800	23,900	29,000	29,700	31,000
To families of blind persons—	3,700	4,000	5,300	5,400	5,600
Adjudication of claims of beneficiaries and to					
maintain beneficiary rolls—	2,000	2,100	2,500	2,900	3,000
Subtotal, Social Security Administration—	27,500	30,000	36,800	38,000	39,600
Welfare Administration: Bureau of Family Services—	51,361	51,705	57,142	66,700	69,100
American Printing House for the Blind—	775	865	1,000	1,028	1,225
Total—	102,980	109,769	128,810	154,225	166,436

OFFICE OF EDUCATION

GRANTS FOR TRAINING OF PROFESSIONAL PERSONNEL IN EDUCATION OF VISUALLY HANDICAPPED CHILDREN

The number of school age visually handicapped children has increased considerably in recent years. Between 1959 and 1965 there was a 38-percent increase in the number of these children registered by State and local schools with the American Printing House for the Blind. It is estimated that there are about 40,000 visually handicapped children of school age in the United States and this number is expected to rise at about the same rate as that of the general school population. Partly because of a shortage of qualified teachers many of these children are not receiving the special instruction necessitated by their handicap. More than 300 newly trained teachers are needed each year just to keep pace with the annual attrition in this area of the handicapped.

During the first 2 years of the program of professional preparation authorized by Public Law 88-164, awards have been made for 173 graduate fellowships, 47 senior year traineeships, 233 summer traineeships, 184 institute traineeships and 8 program development grants in the area of the visually handicapped. A total of 487 persons will receive training during school year 1966-67. It is expected that over 500 persons engaged or preparing to engage in the education of visually

handicapped children will receive awards under this program during fiscal year 1967.

Title III, Elementary and Secondary Education, provides nonmatching grants directly to local education agencies to stimulate and assist in (a) the provision of vitally needed educational services not available in sufficient quantity or quality, and (b) the development and establishment of exemplary educational programs to serve as models for regular school programs. This program gives special consideration to projects that are truly innovative as well as being of high quality and responsive to local needs. In fiscal year 1966, one project was funded for \$27,553.

Title IV, Part A, of the Library Services and Construction Act Amendments of 1966 (P.L. 89-511) provides for books, other library materials, and library services to be made available to students in residential schools for the visually handicapped which are operated or substantially supported by the State. Title IV, Part B, of the Act provides for library services through public or other non-profit libraries, agencies, or organizations, to physically handicapped persons, including the blind and visually handicapped. Funds will be allotted to States for these purposes under an approved State plan. Funds in 1967 have been appropriated for planning only.

Local libraries are currently providing services for these persons but implementation of the new legislation will permit an expanded service. To this end, some States and larger public libraries have employed staff specialists and community coordinators to work with blind and other physically handicapped persons. In addition, the New York Public Library, under a Library Services and Construction Act grant, is carrying on an experimental project to evaluate the need for, interest in, and use of large-print books for persons with severely limited vision.

The leading obstacle in expanding educational opportunities for handicapped children is the lack of qualified personnel. Second is a dearth of scientifically tested knowledge to educate these children.

In 1966, under section 302 of Public Law 88-164, approximately \$136,147 was used to support five research and demonstration projects. Examples of this research follow:

A project at the American Printing House for the Blind in Louisville, Kentucky, pertains to the improvement of tactual symbols for blind children in order to contribute to their education. An attempt will be made to discover more easily interpreted symbols to be used on relief (tactual) maps. Another objective will be to increase the amounts and types of information that can be conveyed to blind children through revised maps. The distance between symbols, their height, and other factors will be studied in various combinations in order to determine which produce the greatest legibility.

The University of Louisville has undertaken a project to develop an expanded reading code for the blind. The first objective is to develop a punctigraphic stimulus alphabet that contains many more characters than the present Braille code. Secondly, when a tested stimulus alphabet is available, several response alphabets will be constructed and matched to the stimulus alphabet. The third objective will be to train people in the use of these codes and to evaluate their performance. The proposed investigation will not be undertaken with a view to replacing the present Braille code. Rather, its purpose is to determine the advantages and disadvantages of an expanded punctigraphic code.

The Office of Education supported three research projects under the Research and Training Program in the area of the blind during 1966, amounting to \$38,415. The first is concerned with the comprehension of rapid speech by the blind, the second concerns school achievement and effect of type size on reading in visually handicapped children, and the third is the development of an expanded reading code for the blind.

VOCATIONAL REHABILITATION ADMINISTRATION

SCOPE OF PROBLEM

There are an estimated 420,000 blind persons in the United States today with an annual increment of newly blinded persons of approximately 10 percent of the total population, or 42,000. Demographers and medically oriented scientific personnel state that small annual increases are expected due to the growth of the

total population and to the fact that blindness is, for the most part, the result of the difficulties which usually attend the aging process. More than 50 percent of all the blind population is above age 60. A substantial number of the remaining group suffer from multihandicapping conditions. Recent advances in surgery and medicine have substantially reduced the mortality rate than was expected in the early part of the century, but those who survive suffer multiple disabilities which must be overcome if they are to lead normal lives and make their contribution to society.

Experience has shown that with good rehabilitation techniques, through training and the current job opportunities which are available to blind persons, it is entirely possible to rehabilitate at least 25 percent of the annual increment of 42,000 persons (approximately 10,500). If the backlog waiting to be served is to be considered as well as taking into account the increase in the total population, more than 12,000 blind persons each year should be rehabilitated.

At present, there are 37 separate State agencies for the blind. In the remaining 17 States and territories, vocational rehabilitation services for blind persons are provided by a specially designated unit within the organizational structure of the State general agencies for vocational rehabilitation. Under these circumstances, the disability of blindness presents a unique opportunity to demonstrate how the total job of rehabilitation can be accomplished and all services can be provided to all blind persons who can profit from them.

THE EXTENT OF DISABLING CONDITION

Although blindness is not the total disaster that the vast majority of the general public believe it to be, it is nevertheless a severe obstacle which can only be overcome through the application of much professional skill and great courage on the part of the individual receiving the service. Contrary to the opinion of many, rehabilitation is not merely finding a job that a blind person can do, but finding the right job that suits the particular individual's aptitudes, interests, and inclinations and training him to do that job to the best of his ability so that he is thoroughly competent and is an employee that is sought after not because of his disability, but because he is a high producer who can turn his skill into valuable cash for his potential employer.

Much has been learned about rehabilitation of blind persons in the last few decades. It is now recognized that in order to attain complete rehabilitation a blind person must not only be given the skills and the tools to do an adequate job, but also the job must be commensurate with his abilities. He must be taught the skills which will make him socially as well as vocationally competent and acceptable to his sighted peers. In essence then, true rehabilitation means finding as many substitutes for sight as possible and training the blind person to utilize the substitutes to his maximum advantage. It also means the psychological evaluation of the total human being and the refocusing of the individual's talents in the achievement of a new and full life. The ultimate goal of 12,000 rehabilitants is well within the realm of attainment. If adequate resources are available, this objective can be realized within the next 5 to 10 years.

PROGRESS TO DATE

At first glance it might not seem that progress has been phenomenal in the last 25 years; however, after the passage of the Barden-Lafollette Act in 1943, the law which gave impetus to rehabilitation of the severely disabled, including the blind, it is significant to note that in the first year only a few hundred were rehabilitated as compared to over 6,000 during the past fiscal year. What is of even greater significance by far, however, is the variety of vocational opportunities now open to blind persons as compared with the circumscribed opportunities less than a decade ago.

RESEARCH AND TRAINING

The expansion of job opportunities is due in large measure to the amount of research, demonstration, and training which was permitted under the amendments of Public Law 565, passed in 1954. Since that time the Vocational Rehabilitation Administration has spent more than \$8 million in research and training efforts demonstrating the feasibility of blind workers in such fields as computer programming, teaching in the public schools, work opportunities in numerous

professions as well as many new categories of jobs in the service, semiskilled, and skilled occupations. Through long-term training grants, the Vocational Rehabilitation Administration has commenced the development of highly trained professional personnel in the field of work for the blind, e.g., mobility instructors, a discipline which is most vital to the rehabilitation of blind persons. It has been estimated that 90 percent of all blind citizens of the United States are unable to travel without the aid of a human guide. It is toward overcoming this grave deficiency that efforts in mobility instruction are now concentrated. It is recognized that this problem must be overcome if true rehabilitation services are to be provided to all those who desire them. Currently there are 24 rehabilitation facilities for the blind throughout the country. In order to do an adequate job, the number of facilities must be doubled and the potential of some of those already in operation increased. Research money is also being expended in the development of many electronic devices which, hopefully, will aid a blind person to travel much more efficiently than is now possible by the use of a cane. Electronic know-how is also being applied in the development of new techniques for producing Braille and for other more efficient methods of reading.

New advances in the field of optics have been developed. As a result, optical aid clinics for those with very limited sight have been opened in strategic locations throughout the country. These clinics are designed to fit blind persons, who have some slight residual vision, with microscopic and telescopic lenses which will enable them to expand their vocational opportunities, and in certain instances to make it possible for them to read the regular printed page. A great deal of perseverance in training is necessary in order for them to obtain maximum benefit of such lenses. However, the clinics do represent a great stride forward. There are approximately 26 clinics across the country, and it is hoped to open at least as many more when funds are available.

The following four illustrative examples of the many new occupational fields which have been opened for the blind within the last decade indicate positive progress:

1. Data processing, and in particular computer programing, is a whole new field which has developed within the past 10 to 15 years. Many professional rehabilitation workers for the blind felt that automation would pose some very serious problems for blind workers and would, in fact, reduce job opportunities drastically. If computer programing can be taken as one example of what will happen as our economy becomes more and more automated, there is reason for great optimism. Through some diligent research programs which have been conducted during the past few years, findings indicate that blind persons with the proper background and interest have an aptitude for computer programing and can be trained for very high level positions in this new field of work. About 150 blind persons are successful computer programers employed in industry and government, and the potential within the next 10 years, according to experts, is roughly 20 times the number now employed.

2. Service occupations, too, will provide their fair share of opportunity for well trained blind persons. It is estimated that in the next 10 years there will be created 6½ million entirely new jobs in the service field. A substantial number of these will be in the many thousands of hospitals, hotels, and motels throughout the Nation. Research and training have demonstrated that many of the jobs ranging from kitchen helper and laundry worker to telephone operator, clerk, and medical transcriber are feasible for blind persons and that well-trained visually impaired workers make desirable employees.

3. In the first decade after World War II, the majority of competitive employment opportunities for the blind were found in industry, particularly in repetitive machine operations. These opportunities were slowly eroded by the installation of highly automated machinery in the drill press operation which today has become an extremely complex job directed and controlled by a taped program. A blind person can no longer be trained as a drill press operator within a few days or even a few weeks of vocational instruction. It is now essential to provide special trade technical training for the blind worker to prepare him to compete with his sighted colleagues and obtain his share of employment in the industrial labor market. The Vocational Rehabilitation Administration is developing a long-range plan to support special units within trade technical schools designed to train blind persons to meet the numerous new challenges in this very important area of skilled employment.

4. A fourth area deriving a great deal of benefit through automation is the Randolph-Sheppard vending stand program. Progress in the number of employed

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operators, stand locations, earnings to operators and gross volume of business is outlined in the following table:

Randolph-Sheppard vending stand program

Fiscal year	Number of stands	Number of operators	Gross sales	Annual average earnings
1966.....	2,661	2,915	\$65,300,000	\$4,932
1967.....	2,850	3,140	72,000,000	5,150
1968.....	3,000	3,400	80,000,000	5,400

This shows a steady progress and a gross volume of business of \$65.3 million in fiscal 1966. According to a recent study, the potential in this field has barely been tapped. It is the opinion of the management firm conducting the study with the proper accommodation to automated equipment the number of stand operators now employed can be trebled and the gross volume of business within the next 5 to 10 years can be doubled. However, this goal cannot be achieved unless vending stand installations are continually upgraded, and blind operators and supervisors are kept abreast of new automated techniques. Equally important, of course, is the complete cooperation and acceptance by public and private building management.

In the last analysis, however, the measure of our vocational rehabilitation program for the blind, and, indeed, the successful effort of our entire society, will be measured not in terms of what we are able to do for those who were deprived of sight but endowed with innate ability, but of what is attained by those for whom equality seemed impossible. Vocational success and the pursuit of happiness for the multihandicapped individual, who in other societies and in former times were passed over without a second thought, must be assured an integral part of our Great Society. There are at least 2,000 of these individuals, each year who can be prepared for employment in a sheltered workshop, and hopefully will progress in time to a point where they will be competitively placed in outside industry. During the past year 600 were so placed. This is a strong indication of what can be accomplished if facilities are available. With adequate resources, the initiative, ingenuity, and imagination of the State-Federal vocational rehabilitation partnership will enable blind citizens to assume full and productive lives so fundamental to the democratic principle which embodies the respect for the dignity of men.

PUBLIC HEALTH SERVICE

NATIONAL CENTER FOR CHRONIC DISEASE CONTROL

The mission of the Neurological and Disease Sensory Branch is to work with official and voluntary health agencies, professional organizations, institutions of higher learning, and other nonprofit groups to prevent, control, and eradicate, where possible, neurological and sensory impairments.

Visual disorders are of major concern to the Branch. In our modern, fast-moving society, the ability to see is understandably important. Visual ability is important to the individual person if he is to develop himself as much as he is able and make his fullest contribution to his family and to society. In addition, the blind can be a serious psychological as well as financial burden to society.

At the present time, there are about 400,000 people in the United States who are blind, and the number is increasing. The advances of modern medicine are largely accountable for this. New techniques and medicines are allowing more and more infants and children to survive complicated pregnancies, deliveries, and once fatal childhood diseases. Often, however, the child suffers some visual impairment. At the other end of the age spectrum, our older population is increasing. As people survive for longer periods, visual impairments such as cataracts and glaucoma become more apparent.

In its endeavors to help those with visual impairments, the Branch is faced with an extreme shortage of people qualified to provide diagnosis and treat-

ment in the field of vision. There are only about 8,000 ophthalmologists and 22,000 optometrists in the United States. The Branch is concerned with training those professional people needed to meet the needs of the Nation. Also, the number of orthoptic technicians and trained ophthalmic assistants is not adequate to serve the needs of the visually impaired. Recently, in an attempt to more efficiently utilize the professional talents that are available much emphasis has been placed on training technical assistants. For instance, amblyopia ex anopsia, a leading cause of monocular blindness in children, and glaucoma, a leading cause of loss of sight in middle-aged and older people, are preventable with early detection and treatment. Because of the short supply of individuals to do complete medical eye examinations, however, screening programs are necessary to determine those likely to be afflicted and see that they get the proper medical treatment.

Short-term training is also encouraged for generalists, pediatricians, and internists to increase their competence in the general principles of visual problems and introduce them to recent developments and advances in treating patients with visual impairments. Glaucoma, amblyopia ex anopsia, ocular manifestations of systematic diseases, and emergency eye care are stressed. Courses for ophthalmologists in dyslexia and the use of aids by the partially sighted are encouraged. The Program is also interested in providing short-term specialized training for nurses whose patients have visual impairments. Also of major concern is applied and clinical research to develop new diagnostic and therapeutic techniques to aid in the early diagnosis and more effective treatment of visual disorders. Interdisciplinary and long-term investigations of unexplored areas of visual impairments are urgently needed and actively promoted. The Branch is continually encouraging those clinical research and demonstration programs which allow the new discoveries from the basic research laboratory to be brought to the patient and to the community in the form of effective new techniques.

Training

During 1967, the Neurological and Sensory Disease Service Branch will support two programs in vision training, involving commitments of \$70,000.

Short-term training, by which a measure of continuing education is provided, will continue to be supported. We anticipate supporting two such programs at a cost of \$20,000 during 1967.

Individual senior clinical traineeships awarded to persons pursuing professional preparation in the field will amount to \$60,000 for the support of five persons.

Programs in Vision

During 1967, project grants totaling \$460,000 will be funded. In accordance with the changing goals within the Public Health Service, emphasis is placed on clinical demonstration projects which move significant research findings from the laboratory into the community. Efforts are also being made to introduce eye tests into multiphasic screening programs throughout the country.

Future Areas of Support

Along with prevention of visual impairments, the Branch is concerned that those persons already with such disabilities obtain the most appropriate and suitable medical, educational, and rehabilitative services. One of the means towards this end will be the development of new training methods and materials for the education of physicians, technical assistants, and the public in the area of vision and eye health. Another will be the development of satellite demonstration centers where research findings may be applied on a community level and where valuable epidemiological data may be obtained utilizing computer techniques for the accumulation and analysis of data.

Encouragement and financial support will be given for the development of new technological instrumentation. Meaningful efforts to apply the knowledge from basic research to combat visual disability and blindness must be accelerated wherever possible.

NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS

Visual disability and blindness already can be reduced significantly by early detection and treatment. However, fundamental knowledge is still lacking in the understanding of causes and mechanisms of blinding diseases. The acquisition

of this fundamental knowledge is essential to any major reduction in blindness and visual impairment. Too, since not only the eye but also the nerve pathways and the brain are necessary for vision, basic neurological research is involved. Sight depends upon the transmission of signals along nerve pathways to the brain and upon cognitive processes. This visual process profoundly affects learning, thinking motivation, and human communication.

Any concerted attack on eye disorders necessarily includes study of the systemic disorders which may involve the eye, such as diabetes, diseases of the blood vessels, and diseases of the nerve and brain.

The incurably blind cannot benefit from either prosthetic devices, such as subnormal vision aids or drug therapy. The only recourse is to provide the people, if possible, with an electronic artificial eye. The Institute is interested in the research being conducted to further this goal and intends to support such activity.

Each step in understanding eye disorders, their nature and treatment represents solid progress toward an ultimate goal of good sight for all. As each discovery is made, however small it may seem in relation to the total problem, the goal is nearer.

During 1966, a number of significant steps were made in this direction.

THE INSTITUTE PROGRAM

The eye research and training programs at the National Institute of Neurological Diseases and Blindness include research at the Bethesda laboratories, research grants to individual scientists in academic institutions throughout the country, and training grants to aid universities and other centers in educating more ophthalmologists and research scientists. In addition to individual research projects, the Institute is supporting eight multidisciplinary research programs in vision. Model Reporting Areas in 14 States provide epidemiological data. Information about the eye and its disorders is also being obtained from the Institute's collaborative and field projects, especially the Laboratory of Perinatal Physiology in Puerto Rico. These vision programs are currently operating at a level of \$15 million.

Program Planning

To assist the Institute in review and planning, an Advisory Council Subcommittee on Vision and Its Disorders was organized a little over a year ago under the chairmanship of a member of the Institute's National Advisory Council. This Council Subcommittee is engaged in a general assessment of the present status of knowledge in vision and visual disorders, a review of current research and training, and identification of problem areas and special needs.

The Subcommittee is providing information gathered from the scientific community upon which the Institute can base long-term planning of its research and training program in the fields of visual science, visual disorders, and blindness. During the past year, the Council consulted with over 250 of the Nation's leading scientists to advise the Institute regarding those areas of investigation now most appropriate for intensive study.

National Information Center

To hasten dissemination of scientific information and to aid in program analysis, the Institute established this year a National Information Center on Vision Research at the Harvard University Library. Objectives of the Center are to define, identify, store, retrieve, and disseminate the literature of vision. so that the information may be communicated more quickly and completely.

This university-based unit combines the resources of a research center and one of the largest medical libraries. Within the Center, some of the Nation's outstanding scientists review and critically analyze the worldwide literature and research reports, in order to increase current awareness of research among scientists, teachers, and clinicians, in ophthalmology and related fields; supervise the preparation of abstracts, summaries, reviews, and analyses of these data; and make this information available, both to the Institute for program planning and to the scientific community at large. Integration of the activities of the Center with the national network of specialized information centers, now being developed with the support of NINDB, is under way.

Conferences

The NINDB in cooperation with the American Academy of Neurology and the American Neurological Association jointly sponsored a Conference on Education

in the Neurological Sciences which featured a symposium on research horizons in several areas of neuroscience, including vision, as well as round-table discussions of aspects in neuroscience education. During the year, the Institute also sponsored a symposium on the retina and a workshop on refractive anomalies of the eye.

Program-Projects

In addition to supporting research projects related to specific problems of the blinding diseases, the Institute is now developing a group of eye research centers in which strong multidisciplinary teams are being mobilized to carry out a broad-scale attack on these disorders. Excellent studies have been reported from four of these vision program-projects now in full operation: The Retina Foundation of Boston, The Neurosensory Center at the State University of Iowa, the University of Chicago Program-Project for studies on glaucoma and disorders of the retina, and the Research Center for Corneal Disorders at Columbia University in New York. This year, with funds appropriated specifically for this purpose, three new centers have been established at the Massachusetts Eye and Ear Infirmary in Boston, the Institute of Medical Services in San Francisco, and at the University of California in San Francisco.

Outpatient Clinical Research Units

This year, the Institute has established a new program of *outpatient* vision research units. Persons whose eye disorders do not require hospitalization are being studied in a more organized fashion by physician-scientists seeking clues to many eye problems. The new units offer opportunities for studying ocular diseases which affect only humans and cannot be duplicated in animals, and for continuing research which has reached its limits in the laboratory or in animal trials. Specific research areas include human macular diseases, diseases of the retina, diabetic retinopathy, corneal research, herpetic keratitis, and ocular pharmacology. The first outpatient units are located at Jefferson Medical College of Philadelphia, the University of Wisconsin, Duke University, New York University, the University of Miami, the Wills Eye Hospital and Research Institute of Philadelphia, Boston University, and Mount Sinai Hospital of New York City.

Blindness Statistics

Adequate statistics on blindness are essential to any program of prevention and control. These must be well defined and carefully assembled. At both State and national levels, this need for information includes not only total blindness but also the related degrees of severely handicapping visual impairment, both in relationship to the socioeconomic setting of each case.

The Institute has organized Model Reporting Areas for blindness in 14 States to provide urgently needed information. These areas use a common method of classification and record keeping intended to produce comparable records from each of the cooperating States. With the addition of four States this year, the project represents approximately one-third of the States and also one-third of the population of the United States. Even so, an extension of the project will be necessary before figures of national significance can be produced.

Training

The research community working in the field of vision and its disorders is proud of its record of accomplishment. However, the responsibility and challenge are enormous when compared with the small number of clinical and basic science investigators in the field. The task ahead must be contrasted with the small size of the research establishment.

NINDB-supported training programs are providing a focal point in 34 university centers for teaching and research in vision and visual disorders. However, in many of the 50 remaining schools there is no focus. To fill some of the manpower needs, the Institute proposes to establish a program of teacher-investigator awards in ophthalmology and the visual sciences. These awards will be for the support of full-time academicians in selected medical centers to promote leadership in the development of programs of undergraduate and graduate training and in the establishment of eye research programs in areas where these are lacking.

In fiscal year 1966, 379 trainees benefited from the Institute's grants in the fields of ophthalmology, ophthalmic basic science, and vision psychophysiology. Eighteen special fellowships were awarded in the areas of neuro-ophthalmology,

ophthalmology, ophthalmic pathology, and sensory physiology to prepare basic and clinical scientists for careers in research and academic medicine and related fields. The Institute has given one Research Career Award on sensory physiology (vision). There were 13 Research Career Development Awards and 7 post-doctoral fellowships awarded in ophthalmology and ophthalmological sciences.

RESEARCH

Glaucoma

Glaucoma is an eye disease due to increased pressure of the aqueous fluid within the eyeball which tends to destroy the nerve cells within the retina. If untreated, it leads to impairment of vision and eventual blindness. The major emphasis of NINDB glaucoma research is toward a better understanding of the processes for maintaining proper pressure within the eye, including the early use of medications which save vision by correcting the pressure. Therefore, NINDB researchers are studying the effects of drugs on eye pressure to facilitate early diagnosis. Epidemiologists are defining the characteristics of individuals for whom special vigilance is required because they are especially prone to develop glaucoma.

It is now believed that it will be possible to predict which individuals are prone to develop glaucoma because of the knowledge gained about the genetic and hereditary patterns of this disease. This represents an important advance in the field of preventive medicine. It means that we may now be able to treat patients at an early stage, thereby greatly reducing the number of people blinded by glaucoma.

This great move forward has been made possible through highly significant studies such as the Collaborative Glaucoma Study and the recently discovered steroid provocative test.

The administration of anti-inflammatory steroids was found to coincide in its effect with that of the standard water-drinking provocative glaucoma test. Minimal, moderate, and maximum responses were obtained, indicating absence or presence of glaucoma. This steroid-induced glaucoma may be the result, according to one hypothesis, of increased rate of production of aqueous humor.

In addition, much progress has been made in our understanding of the basic dynamics of intraocular pressure, and in applicable diagnostic techniques.

Community-wide screening with the aid of tonometry is making it possible to find many victims of glaucoma before the disease has advanced to a stage where vision is affected—often among people who have had no suspicion that they were affected. Continued and expanded epidemiological, genetic, laboratory, and diagnostic studies are needed, however.

In addition to patient and laboratory studies, the Institute is conducting epidemiology studies of chronic simple glaucoma in selected population groups in Pennsylvania and Arizona. Variations in tonometry techniques for measuring eye pressure have been subjected to searching evaluation. Another study of 200 pairs of twins has been established to determine genetic influences in the development of glaucoma.

Cataracts

A cataract is a clouding of the lens of the eye which interferes with normal passage of light rays to the retina.

At the present time, the only known treatment is the surgical removal of the lens. This is a relatively simple operation which has been facilitated in recent years through the use of the enzyme, alpha chymotrypsin, to loosen the lens. At the present time it is possible for even very elderly patients to undergo cataract surgery if their general health is good.

Less well known is the fact that many children are born with cataracts. They will have the best chance to see normally if surgery is performed between the ages of 6 and 18 months, according to recent research findings of NINDB grantees. If congenital cataracts are removed in late childhood, functional results are likely to be poor, these investigators found. On the other hand, the sooner the surgery, the less likely the development of irreversible changes in the eyes.

Over a period of 5 years the case for early surgery was demonstrated in studies of the visual pathways of developing kittens with cataract or artificially induced blindness. These studies demonstrated that if vision is not

permitted during the early months of life, the visual pathways do not develop fully. Even though vision is later restored, the essential functional connections may never be established, and there is permanent visual impairment. A similar situation exists if a muscle imbalance occurs which prevents the two eyes from focusing on the same object. If such a squint is permitted to persist too long, the mechanism for the coordination of eye movements is severely retarded, and there is deep-rooted impairment of the ability to develop binocular vision. Accumulated evidence suggested that children whose eyes have been similarly incoordinated since birth will have difficulty with effective binocular vision and the fusion it requires even after the incoordination is corrected.

If few binocular synapses remain in the cortex, even the most skillful balancing of extraocular muscle tensions would cause little more than cosmetic benefits. The earlier the surgery, the less likely the development of irreversible changes in the eyes. Investigators conclude that in such cases, operations between the ages of 6 and 16 months seem advisable.

Research by Institute grantees has provided valuable data on the physical and chemical properties of lens proteins. Since the formation of cataracts is associated with accumulation of insoluble proteins, these data are valuable in understanding cataracts.

Laboratory studies recently revealed the presence of the German measles virus within the cataractous lens of infants whose mothers had the disease early in pregnancy. This finding is extremely important in terms of our understanding the mode of action of this virus in producing cataracts.

Studies indicate that cystoid macular edema, or papilledema, may be present in patients whose vision fails to improve or suddenly decreases after cataract surgery. This is another problem to meet, if sight is to be saved.

Disorders of the Cornea

The cornea is a transparent membrane covering the iris or colored portion of the eye. Similar in size and structure to the crystal of a wristwatch, it acts as a protective window through which light rays pass on their way to the retina. The cornea also helps to bend and focus light rays.

Scarring produced by injury and disease causes 10 percent of the blindness in the United States and much more of the blindness in the Near and Far East. However, new drugs and improved treatments are helping to reduce the amount of this type of blindness.

Viruses.—In this country the most common cause of corneal ulcers and blindness is infection with a virus called herpes simplex, which also causes the common cold sore. One of the most significant advances in therapeutics was the discovery several years ago that herpes simplex could be cured by the drug 5-iodo-2-deoxyuridine (IDU). This was the first drug to be proved effective against any virus, and has opened up new approaches into the broader study of antiviral drugs.

Corneal transplants.—When corneal diseases are not treated promptly, they may destroy the cornea's transparency, and cause poor vision or blindness. Fortunately it has been found possible to substitute a healthy cornea for a diseased one.

Some successful corneal transplants have been made for almost 20 years. They are usually performed with corneas taken posthumously from persons who have previously signed statements donating their eyes to eye banks. Recent Institute studies have led to improvement in transplants and in freezing and dehydrating corneas for long-range storage and shipment. This year an improved technique was developed for transplanting which may mean that some cases previously considered hopeless will regain vision.

One of the big problems with conventional transplants is that the cellular layer on the back side of the cornea—the endothelium—easily becomes damaged by a transplantation immune reaction. This results in the accumulation of fluid (edema) in the endothelium of the cornea. Such edema is rarely reversible and usually results in a cloudy graft so that the eye remains blind.

With the new procedure, a thin transparent membrane, made of silicone rubber, is sutured in back of the corneal graft. This serves as a barrier to the influx of fluid from the anterior chamber of the eye. With the insertion of the "fluid barrier," the corneal edema is reduced or eliminated and the graft has a much better chance of surviving.

The silicone rubber membrane adds support and distributes pressure from the sutures evenly over the graft, ensuring smoothness. The transparency of the silicone membrane permits inspection of the wound to observe progress of healing and formation of the anterior chamber. Local medication can be given with normal effectiveness.

While still in the experimental stage, plastic corneal implants have proved their value for a number of persons for periods of time up to 5 years.

Recent improvements in surgical techniques have greatly enhanced the prospects of success in corneal transplant operations, but graft rejection due to auto-antibodies has remained a serious problem. Certain drugs inhibit the induction and production of antibodies, but to determine which are the best drugs and what are the most desirable dosages, it is necessary to have a baseline in relation to which their powers may be tested. Until the mechanism of rejection is known, the choice of drugs must be empirical.

In a series of animal experiments, NINDB scientists augmented the intensity of the corneal graft rejections with simultaneous skin implantations from donor animals to recipients. Such recipient animals uniformly showed graft reactions with complete and sudden clouding of the grafted corneas on an average of 12 days postoperatively. This represented an earlier and more uniform reaction than had been achieved in previous efforts to establish a baseline.

Now it was possible, through a series of controlled experiments, for the investigators to demonstrate that three immuno-suppressive chemicals, namely 6-mercaptopurine—examined in a previous study—azathioprine, and corticosteroids, could delay or even suppress graft rejection in animals. The latter appeared to be the safest and most effective.

The establishment of a baseline for measuring effectiveness of suppressive drugs represents an important step in the development of agents to assure successful corneal transplant surgery.

Retinal Disorders

Although the cornea, lens, and other tissues help convey light through the eye, the actual visual process does not begin until light strikes the retina. This light-sensitive tissue at the back of the globe of the eye is the site of many disturbances which lead to visual impairment. Disorders of the retina include circulatory disturbances, injuries, inflammations, degenerations, detachments, tumors, and congenital anomalies.

Many of these disorders, especially degenerations and anomalies existing at birth, are untreatable by present-day medicine. Therefore, investigators are seeking to understand the basic anatomy and function of the retina, which they feel is necessary before treatment or prevention is possible.

Accurate understanding of retinal topography was increased this year through NINDB studies which systematically evaluated the nature of the retina in a series of eyes obtained through surgical removal and autopsy. This analysis revealed the general size and shape of the retina, the dimensions of the optic disk, and the relationship between the disk and the foveola. Through such topographical studies we shall have a better understanding of the physical and physiological characteristics of the eye.

Retinal Detachment.—Retinal detachment is a separation of the innermost layer of the eye, the retina, from the choroid, the layer just behind it. These two layers are usually in close contact; but if the retina should peel away or be pushed up from the choroid, all or part of the vision is blocked out.

Retinal detachment may be due to injury or disease. Changes that occur with age increase the chances for detachment. Persons who are nearsighted or who have had cataract operations may also be predisposed to detachment. Most detachments, however, occur for reasons unknown to medical science.

If treated early, retinal detachment may be arrested by procedures which produce an adherent scar at the point of separation. There have been important advances in the way in which this is accomplished. The retina may be burned by a sharply focused laser beam. More recently, freezing techniques (cryosurgery) are proving highly effective.

Recent advances reported in the use of retinal light coagulation indicate that certain lesions, particularly in cases of diabetic retinopathy, small fundus tumors, and lesions that lead to retinal detachment, may respond in selected cases to light coagulation. In this method, light makes a "spot weld" which, when properly directed, can be used to close off blood vessels, seal a retinal hole, anchor

the retina to underlying tissue by scar formation, or necrotize ("kill") small tumors. Certain medical lesions of the fundus may be treated by light coagulation alone; in others, it is necessary to supplement the coagulation effect with heat applied to the posterior scleral surface after surgical exposure. Success with this method depends upon careful selection of patients; all cannot profit from it.

Understanding of retinal detachments was advanced by the evidence that there may be hereditary causes. There is indication of a relationship between myopia and retinal detachment. This was substantiated by a statistical analysis of 1,000 cases.

Diabetic Retinopathy.—Diabetic retinopathy is a vascular disorder of the eye which occurs in conjunction with diabetes. The condition is caused by balloon-like enlargements (aneurysms) of the capillaries supplying blood to the retina. No effective treatment is currently available. The incidence of this disorder increases with the length of time an individual has had diabetes. For example, in a series of patients who had diabetes for 15 years, 70 percent showed retinopathy, and of those who had diabetes for 25 years, 90 to 95 percent had diabetic retinopathy.

Morbidity statistics indicate that in 1934 the incidence of diabetic retinopathy among diabetics was 17.7 percent; in 1945 it was 29.6 percent; and in 1955 it was 47 percent! Diabetic eye complications are among the leading causes of blindness in the United States.

A few short years ago there was no specific treatment for diabetic retinopathy, but recently a few physicians have had success with removal of the pituitary gland in patients threatened with blindness. Preliminary results have shown improvement in visual acuity with no known harmful effects from the surgery. Nevertheless, further observations are needed before the procedure can be widely recommended.

Future studies are needed to further elucidate the mechanism of diabetic retinopathy and to develop a natural history which will make possible a more precise evaluation of present treatment methods.

A grantee study of the condition of retinal capillaries after the death of diabetic and nondiabetic patients may provide a better understanding of the disorder. Investigators found that in addition to retinal microaneurysms, diabetes is characterized by capillary sheathing and a decrease in the ratio of pericyte to endothelial cells. This blood-vessel damage is not evident in clinical examination, for by the time that capillary lesions become so gross as to be recognized clinically in the form of incipient diabetic retinopathy, the patient already has generalized diabetic microangiography (disease of the capillaries).

Retinitis Pigmentosa.—Retinitis pigmentosa is an inherited disease that usually produces its first symptom—night blindness—in childhood. Over the years peripheral vision is lost through changes which take place in the retina.

The electroretinogram and a related test, the electrooculogram, have provided very sensitive and accurate measurements of retinal damage to patients. These tests have been helpful to Institute scientists in localizing early retinal damage in the rod photoreceptors rather than in the cones.

A recent study suggests that while the light to which human beings are customarily exposed rarely produces permanent damage to normal eyes, people with inherited night blindness may benefit from wearing dark glasses when exposed to bright light. This may be particularly helpful in cases of a chronic progressive degeneration: subjective symptoms are night blindness, contraction of the field of vision, and diminution of sight.

In this study scientists found that albino rats with normal vision when kept around the clock in light of ordinary brightness developed severe night blindness after only 3 to 5 days of exposure. Given longer periods, up to 3 months, of dark adaption afterward, these animals recovered very little of their normal sensitivity to light. The visual cells in their retinas were almost completely destroyed by several days of constant exposure to light.

Retrolental Fibroplasia.—Retrolental fibroplasia (RLF) was once common in premature infants, until it was discovered through an Institute-supported study that the ocular abnormality was related to excess oxygen consumption.

A recent study of experimental retrolental fibroplasia threw new light on the underlying mechanism of this disease which may also aid in understanding other vascular disorders of the retina. It appears that this blinding disorder may be caused by the same mechanism that produces retinitis proliferans (the late stage of diabetic retinopathy), and blindness following retinal vein occlusion.

Investigators used light and electron microscopy and histochemical techniques to study changes (hyperoxia) produced in retinas of premature kittens and other animals by excessive oxygen. Findings suggest that blood vessel proliferation (reproduction of cells and morbid cysts) following hyperoxia might be due to the liberation of some toxic substance by degenerating endothelial vessels.

Recent studies have demonstrated that full-term infants exposed to oxygen therapy are sometimes affected, too. Investigators found that the retina is not fully vascularized until shortly after birth of the full-term infant. Animal experiments have shown that the incompletely vascularized retina is susceptible to oxygen damage.

An Institute workshop planned for 1967 will discuss oxygen use in hyaline membrane disease and its potential for causing RLF.

Diseases of the Conjunctiva

The conjunctiva forms the liner of the lids and is contiguous with the lining of the lacrimal apparatus.

Conjunctivitis is a general term covering a number of symptomatic complaints including itching, tearing, and foreign body sensations which are not necessarily due to local conjunctival disease. Conjunctival disorders may be allergic, bacterial, or traumatic. All are inflammatory.

In a 10-year study of kerato-conjunctivitis, a research team recognized 12 distinct clinical and etiologic types of the disease. They learned that adenoviruses are the principal cause of acute follicular conjunctivitis, and herpes simplex virus the principal cause of keratitis. Keratitis and conjunctivitis caused by other viruses were also studied.

Trachoma

Trachoma, a viral disease which produces scarring of the eyelids and opacification of the cornea, is a prolonged progressive disease which spreads through families and institutions, especially in depressed areas where hygiene is poor. Current World Health Organization estimates indicate that more than 400 million people throughout the world suffer from this disease. The disorder can be cured by drugs, but there is a lack of natural immunity and frequent reinfection is common.

Much more research is needed to find an effective vaccine for prevention, and therapy for permanent cure, before trachoma can be eradicated. Diagnosis of early trachoma has always been a problem. The development of an immunofluorescent technique, however, has been a major diagnostic advance.

This is an area where the ophthalmologic community can make substantial contributions toward the eradication of disease not only in a portion of our own population, but in the undeveloped areas of the world which are looking toward our technology for help.

Under the leadership of the Neurology Institute, the first broadscale scientific survey on the prevalence, causes, and possible means of prevention of trachoma is under way in Egypt. This study of the world's most prevalent blinding disease is expected to yield a store of knowledge. A random sampling of 10,000 of 250,000 inhabitants in two large areas has now been tested for visual acuity and subjected to study, in the survey which will continue for several years.

Although trachoma blinds many people in most parts of the world (the U.S.A. is relatively free of it save among the Indians of the Southwest), Egypt was chosen for the study because trachoma occurs there in epidemic proportions.

Attempts to eradicate trachoma through mass public health programs have been successful only in the more highly developed nations. In other countries such campaigns have either failed to cure or there has been a high percentage of relapsed cases and reinfection. This is true even among Indians in southwestern U.S.

Uveitis

The underlying causes of some types of uveitis (inflammation of the iris), which strikes people in the most productive years, has been found in some cases to be toxoplasmosis, syphilis, or tuberculosis, but the cause of the majority of cases is still unknown.

Several hundred uveitis patients have been admitted to the Clinical Center for close observation and treatment with drugs. Institute scientists were among the first to discover that the infection, toxoplasmosis, is a major cause of uveitis. They concentrated their studies this year on a concerted attack on the disease

with use and evaluation of a group of drugs. A new antibiotic was found to be effective when used in combination with the usual treatment for uveitis. The effects of chemotherapy on presumably toxoplasmotic uveitis and the usefulness of antimetabolite treatment on specific types of uveitis appear to hold great promise.

The role of hypersensitivity to disease-producing microorganisms or to altered tissues needs much more intensive study. Animals have been inoculated to produce similar lesions, and such studies should be continued. Extensive epidemiological studies are needed and uveitis clinics are necessary for research.

The Institute's Collaborative Perinatal Project, which studied 60,000 pregnant women and their offspring, has revealed evidence of toxoplasmosis in 1 out of every 2,000 babies. A series of controlled epidemiological studies, to demonstrate more precisely how this infection is transmitted, may do much toward eliminating it.

Exophthalmos

New information on the nature and treatment of dysthyroid (endocrine) exophthalmos, and recent advances in surgical treatment for the condition will bring new hope to victims of this disease, which is characterized by abnormally prominent eyeballs with lid retraction and an excessive accumulation of fluid in tissue spaces.

In two related research projects, Institute grantees succeeded in (1) establishing the site and nature of the changes which take place in ocular muscles in cases of dysthyroid exophthalmos, and (2) tested the chances of success to be expected in this disease. The investigators concluded that surgery is indicated only in the acute phase of the disease, where the cornea and optic nerve are threatened and where other measures appear inadequate.

Antithyroid drugs proved effective in one study of 129 patients whose cases were controlled over a period of years with the drugs. In none of these cases was ocular surgery required nor did the ophthalmology significantly worsen.

In cases where the medical treatment alone does not stop the progress or fails to improve the condition, X-ray therapy to the orbit has been found beneficial.

Angiographic examination (the study of blood vessels of the eye) has proved to be a safe and valuable method for establishing the nature of unilateral exophthalmos.

Various studies have demonstrated the promise in potential application of ultrasound when combined with other ophthalmologic techniques in dealing with the disease.

In one study, a basic problem in surgical correction of the severe limitation of elevation so frequently seen in the end stages of this disease was found to be the fibro-adhesive connections between the interior rectus and inferior oblique muscles and to the orbital floor. In a new method of surgery, these adhesions are separated with recession of the inferior rectus, and in some patients, recession of the medial rectus. Improvement was obtained in all cases.

Tumors

The more enlightened management of ocular neoplasms, based on better knowledge of their biological behavior, constitutes one of the major advances that have been made in clinical ophthalmology. Refinements in diagnosis of intraocular tumors, which too often lead to serious visual loss and may also create life-endangering situations, have been achieved through long-term studies by Institute scientists and grantees. The relatively benign character of certain tumors of the uvea, conjunctiva, eyelid, orbit, and lacrimal gland has become widely appreciated and efforts are being made to develop more conservative techniques in their treatment. Other tumors are being recognized as highly malignant cancers requiring early radical surgery if the patient's life is to be saved.

As examples characteristics of malignant tumors of the choroid may now be identified preoperatively by the use of new techniques and instrumentation. In a system developed in the ultrasonic laboratory, an ultrasonic record is produced which has the appearance of an active photograph of the diseased tissue or tumor of the eye. This facilitates recognition of characteristics of different tissues.

Radiation therapy has been reported 84 percent successful in one experimental project in initial and secondary treatment of patients with retinoblastoma (tumor of the retina). This was the first time that supervoltage irradiation had been used exclusively in a uniform manner. The project was reported after patients:

had been observed for a period of 6 years with no deaths and with generally useful vision.

Far more sophisticated methods of diagnosis and detection of malignant tumors of the eye are urgently needed. While the new methods, using fluorescent dyes and radioactive tracers, appear to hold great promise, more specialized tumor diagnostic centers are needed. The lack of experimental models has hindered investigation of the basic dynamics of tumor growth and development.

Refractive Anomalies

This year, as part of its program to promote exchange of information and generate new research approaches, the Institute has supported a workshop on refractive anomalies of the eyes. Considered by approximately 30 specialists from various parts of the world were such eye disorders as hyperopia, myopia, presbyopia, astigmatism, and anomalies of the accommodative and convergence mechanisms. Recommendations for further research into these eye conditions, which affect more than 90 percent of the Nation's population, were made regarding the mechanisms giving rise to dysfunctions and diseases, diagnostic and therapeutic techniques available, and promising areas for future investigation.

In recent years, important advances have been made in the ability to correct errors of refraction, such as myopia (near-sightedness), which range from minor problems to serious involvements, some of which lead to severe visual impairment. So, too, has there been advancement in the design of instrumentation needed to exploit these new developments. Lasers, X-rays, and ultrasound have all been used successfully.

Several grantees are studying how the retina codes light impulses into electrical messages as well as how the brain decodes the message and produces the image we call vision.

Studies of the relation of the vision mechanism to perception of time, space, color, brightness, and form continue to receive support.

Institute grantees are investigating optics and refractive disorders. The use of high speed computers and ultrasound to measure different parts of the eye may lead to greater understanding of these areas. Other investigators are studying the muscles which move the eye.

Much of the work of Institute grantees has been directed to mapping the visual impulse through the retina and various nerve pathways in the brain. The knowledge that has been gained from these studies has contributed greatly to understanding of the nervous system as well as the visual function. It has been shown, for instance, that there is an independent nerve pathway for the eye to pick up and follow moving objects.

Color Vision

Investigations have added to the information on the chemistry and other properties of the pigments in the human eye on which color vision depends. The spectra of these pigments have been determined by direct microspectrophotometry and their composition determined in part by direct regeneration experiments. Also a simple psychophysical procedure has been designed that isolates the action spectra of these pigments in living subjects. This makes it possible to measure the color vision pigments and their properties in the eyes of normal, color-blind, and color deviating subjects. The information so obtained has implications for the genetics of inherited types of color defective vision.

Microspectrophotometric measurements upon the outer segments of the cones of primates and of fish which appear to be able to distinguish colors in the same manner as humans have explained color vision at the receptor level; these animals possess three classes of cones, each of which absorbs light maximally in a different part of the spectrum. However, electrophysiological studies in both fish and primates have shown that the different classes of receptors are not connected by separate pathways to the brain. Instead, opponent pairs of receptor types exert the antagonistic effects of excitation and inhibition upon the retinal ganglion cells.

It has been incontestably demonstrated that topical administration of certain adrenocorticosteroids produces in some individuals an increase in intraocular pressure. Were it possible to find a drug with anti-inflammatory activity, yet free from intraocular pressure-increasing effect, the result would be both a beneficial therapeutic agent and a valuable investigative tool. Some success with such a medication, a synthetic steroid called medrysone, has been reported. Administra-

tion of this drug was not associated with rise in intraocular pressure in either glaucoma patients or normal volunteers.

A new synthetic steroid called medrysone was successfully used with glaucoma patients and normal controls. This drug has anti-inflammatory activity yet is free from the intraocular pressure-increasing effects which characterize certain other drugs used to control glaucoma. It should be a valuable investigative tool as well as a beneficial therapeutic agent.

Because a number of drugs being used in the treatment of systemic disease may have dangerous side effects on the eye, it is important that these side effects be recognized at the earliest moment in order that blindness may be prevented. For example, chloroquine, used to treat arthritis and lupus erythematosus, produces eye damage if given in large doses over prolonged periods of time. The most serious, and irreparable damage, is that which occurs to the sensitive neural film—the retina of the eye. A simple test has now been devised to recognize this dangerous reaction in its earliest stages.

To be treated are a continual stream of individuals from all walks of life who have been exposed to an unbelievable array of toxic agents, the actions of which are only partially understood and for which we have few antidotes.

Expanded research dedicated toward the development of new and effective pharmaceuticals for the treatment of many eye disorders is of at least equal importance. It is to the national interest to develop more active programs dealing with these critical problems.

Instruments and Techniques

Increasingly, psychology and engineering are joining forces with medicine and surgery to find the answers to problems of vision. While scientists keep their sights on prevention and treatment of eye disorders, they also look forward to the day when an artificial eye may be developed, perhaps with the characteristics of a miniature TV camera, which can replace a faulty human eye. So positive are scientists that this may become a reality that definite planning is under way to lay the groundwork for this accomplishment. Meanwhile, many new instruments and techniques have been developed which are helping physicians in their treatment of patients with visual disorders.

Just recently a grantee designed and built a retinal densitometer with which he can measure in 10 seconds the amount of visual pigment upon any selected region of the human retina. With this he is measuring visual pigments, and is studying bleaching and visual function and the electrophysiology of the retina.

An instrument for measuring corneal thickness by optical means has been developed. This type of apparatus can be used on any modern slit lamp. It increases the accuracy of this type of measurement in normal corneas and those which are opaque. It practically eliminates distortions present in older instruments. It assures that the measurement is being made while observing the cornea at exactly the right angles.

A model of the retina has been developed. Electro-oculography has been developed as a technique for clinical usefulness in understanding rod and cone anatomy and connections.

SUMMARY

As can be seen from this brief review of the field of vision, the research is extremely complex and the causes of blindness many. Unsolved problems in the field are legion, but there are many hopeful elements: great strides in research have been made in the last few years; there are now more well-trained investigators available than at any previous time; more research projects are under way than ever before; and there are more well-equipped eye research centers. This does not mean that the needs for manpower, money, and facilities have been met, but rather that research is moving in the right direction.

SOCIAL SECURITY ADMINISTRATION

The purpose of the old-age, survivors, and disability insurance program is to pay benefits to insured workers and their families when they have suffered a loss of earnings due to retirement in old age, the death of the insured worker, or a severe disability. As of June 1966, 30,000 individuals for whom blindness was a significant factor in their disability to work were receiving monthly an estimated \$2,200,000 in disability benefits. (A disabling condition of the eye was the primary diagnosis in about 65 percent of these cases.) In addition, their

families were receiving an estimated \$400,000 monthly. It is not known how many blind persons are receiving monthly benefits as retired workers, dependents of retired workers, or survivors.

Beginning with the enactment in 1954 of the disability freeze provision of the Social Security Act, the special problems of the blind in earning a living have been given particular recognition. The disability freeze protects a worker's future benefit rights, and the benefit rights of his family, under the Social Security program while he is unable to work because of disability. This protection is offered to those who become blind by a statutory definition even if they are still able to work. For example, a person who experiences a severe reduction in his level of earnings because of blindness can be protected from a comparable reduction in the level of monthly benefits he will receive in the future.

Through subsequent amendments to the Social Security Act, monthly disability benefits have become payable to disabled workers and their families, including the blind and their families. Special provisions in the Social Security Act reduce the work requirement for eligibility to benefits for workers who become blind between ages 21 and 31, and provide for monthly benefits for blind workers ages 55 to 64 who, although not totally disabled, are unable to do work requiring abilities comparable to those of their regular occupations.

During calendar year 1966 the Baltimore and Washington offices of the Social Security Administration employed 12 totally blind persons as dictating machine transcribers and clerk stenographers. They were trained and referred by the Maryland State Department of Vocational Rehabilitation. On an individual basis, their work performance equals or exceeds that of sighted employees.

WELFARE ADMINISTRATION

The Bureau of Family Services of the Welfare Administration administers public assistance grants to States (Title X and XVI of the Social Security Act) to assist needy blind individuals by providing financial assistance, medical care, and social services to help them deal constructively with their economic, health and social needs. All 50 States, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands have the program of Aid to the Blind (AB).

Expenditures

Total Federal, State, and local expenditures made under Titles X and XVI for the Aid to the Blind program in fiscal year 1966 were \$101,466,000. Of this amount, \$81,109,000 represented cash payments to recipients; \$10,264,000, payments to medical vendors on behalf of AB recipients; and \$10,093,000, the cost of State and local administration, services, and training associated with the program. Comparable figures for fiscal year 1965 were: total expenditures, \$108,945,000; cash assistance, \$86,650,000; vendor medical payments, \$12,248,000; and State and local costs for administration, services, and training, \$10,047,000. The Federal share of these expenditures, for all items combined, was \$54,746,000 in fiscal year 1966 and \$51,726,000 in fiscal year 1965. Thus, while Federal, State, and local expenditures for the Aid to the Blind program decreased between fiscal year 1966 and 1965 by \$7,479,000, the Federal share increased by \$3,020,000. This is due to several factors, including the more generous Federal matching available as of January 1, 1966, under the 1965 amendments to the Social Security Act.

The above data relate only to expenditures made for the blind under Title X (aid to the blind) and Title XVI (aid to the aged, blind, or disabled) of the Social Security Act; this latter title permits the State the choice of administering its adult assistance programs under individual titles or under one title, Title XVI. The expenditure data do not reflect, for fiscal year 1966, some payments made for the blind under the new Title XIX, Medical Assistance Program, enacted in the 1965 Social Security Amendments. During the period January-June, 1966, eight States and Puerto Rico adopted Title XIX and started providing medical assistance for the blind under this program rather than under the Aid to the Blind program. Data on medical assistance provided under Title XIX for the blind during this 6-month period are not available.

Caseloads and Average Payments

In fiscal year 1966, the average monthly number of AB recipients receiving money payments was 85,000, or 10,400 less than the average monthly number of 95,400 receiving payments in fiscal year 1965. Although the program has con-

tinued to decline in recent years, the large decrease between 1966 and 1965 is atypical due to the establishment, in one State, of a separate program for blind individuals not considered "needy" under the Federal Act. The decline between fiscal years 1963 and 1964 was 1,700 and between 1964 and 1965, 1,400. Average monthly payments to recipients, however, have continued to increase: in fiscal year 1966, the amount was \$81.20 compared with \$75.95 in 1965, \$74.00 in 1964, and \$71.55 in 1963. The average vendor payment for medical care per AB recipient in fiscal year 1965 was \$10.63, compared with an average of \$11.72 in the first six months of fiscal year 1966. Information on medical care related solely to the blind is not available for the period beginning January 1966, when some States first adopted Title XIX Medical Assistance Programs; medical care on behalf of the blind has undoubtedly continued to improve, however, because under Title XIX States must provide high quality medical and remedial care for all persons receiving public assistance.

Eligibility

To be eligible for Aid to the Blind, Federal policy defines visual eligibility as including "persons having insufficient vision to perform tasks for which sight is essential, as well as persons without vision." In other words, visual limitation determined by ophthalmic measurement must be severe enough to result in "economic blindness." It is not necessary to be totally blind.

The blind applicant must be a needy person but there are no age limitations in the Federal Act, although a number of States have laws excluding children. Unlike the other categories, Aid to the Blind may include the whole lifespan from infancy to old age.

Public Assistance Role and Responsibilities

In addition to providing needy blind with cash assistance for basic maintenance, public assistance agencies may also provide for treatment to preserve remaining vision, for restoration of sight through surgical and medical attention whenever possible, for medically recommended optical aids to maximize use of residual vision, and for medical and dental care for other health needs.

The Federal Government will share the cost of special items related to the unique needs of the blind: a telephone, guide fees, transportation expenses, extra laundry and dry cleaning allowances, higher food expenses when the handicapped person does the cooking or must take meals in a restaurant. The food allowance for a seeing eye dog is another illustration of the flexibility that is possible.

Safe and sanitary housing is extremely important for the blind as well as safe household equipment to prevent burns and accidents. Hence, moving expenses and higher rent expenditures may be required to assure this protection for the needy blind.

The 1962 amendments encourage more comprehensive social services for the blind by providing 75 percent Federal financial participation in their costs. Forty-one States are now receiving 75 percent Federal matching for these services. To obtain this additional money, a State's services must encompass the blind who are in need for protection because of physical or mental handicaps or adverse social circumstances. There must also be provision for those who require special help to remain in their own homes or elsewhere in the community of their choice, thus avoiding unnecessary institutionalization. Similar services must be given to enable clients to return to their communities following a period of institutional care. Blind recipients with potential capacity for becoming either partially or completely selfsupporting will be assisted with plans to secure training opportunities. All of these service areas include not only the blind client but may be extended to relatives as well when their circumstances influence case planning.

Public welfare agencies collaborate with many other agencies toward the joint goal of restoration of blind people to the maximum level of health, employability, and personal satisfaction their capacities permit. By proper referral and provision of needed supportive services, the public assistance agency implements this goal so the handicaps of severe visual limitations may be mitigated or overcome. Illustrative of the foregoing: utilization of vocational rehabilitation services for young adults and those of middle age; special educational provisions for blind young people; casework services for parents of young blind children; encouragement of attendance at adjustment and mobility training centers; use of home teachers; sheltered work opportunities and community recreational resources and acquisition of talking book machines with the wide choice of records available from the Library of Congress.

For the past 6 years, the Welfare Administration has held an annual meeting for State supervising ophthalmologists associated with State AB programs in conjunction with the annual sessions of the American Academy of Ophthalmology and Otolaryngology. This has proved to be a valuable opportunity to share information and hear about operation of the State AB agencies represented. These meetings will be continued in the future.

Cooperation with Organizations Serving the Blind

Staff continue to carry on cooperative activities with other public and private agencies, including: the Division of Services for the Blind, Vocational Rehabilitation Administration; the National Institute of Neurological Disease and Blindness, with particular interest in the development and implementation of their task of involving States in the model reporting area for blindness statistics; the National Society for the Prevention of Blindness on the use of their standard classification of causes of severe vision impairment and blindness; the American Foundation for the Blind; the American Council of the Blind; and the National Federation of the Blind.

AMERICAN PRINTING HOUSE FOR THE BLIND

This nonprofit institution, in Louisville, Kentucky, is responsible for the manufacture of special books and teaching materials which are distributed to all public educational institutions for the blind as well as to the regular public schools in which blind children are enrolled.

Numbers of blind children served by the program were 18,627 in 1966; 19,250 and 19,840 are estimated for fiscal years 1967 and 1968.

**STATEMENT OF DR. JOHN E. BORDLEY, ANDELOT PROFESSOR AND
CHAIRMAN, DEPARTMENT OF LARYNGOLOGY AND OTOTOLOGY,
JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE**

Senator HILL. Now, Dr. Bordley.

Dr. BORDLEY. Thank you for allowing me to be heard.

I am John E. Bordley, M.D., Andelot professor and chairman of the Department of Laryngology and Otology of the Johns Hopkins University School of Medicine, a past president of the American Society of Laryngology, Rhinology, and Otology, a former member of the Advisory Council of the National Institute of Neurological Diseases and Blindness, and a member of the following committees:

The National Committee for Research in the Neurological Disorders; the Committee on Oto-Laryngic-Pathology of the Academy of Ophthalmology and Otolaryngology; the Review Committee on Program Projects and Grants for Ophthalmology and Communicative Disorders, and the Advisory Committee of the Society of University Otolaryngologists.

Senator HILL. Excuse me one minute, Doctor, the name "Andelot," where does that come from?

Dr. BORDLEY. This was a name attached to a chair that was set up by a donor.

Senator HILL. A donor who had that name?

Dr. BORDLEY. Yes; his family came from Andelot, France, and it is an old family name.

PROBLEMS OF COMMUNICATIVE DISORDERS

My task today is to present to you the problems in the field of the communicative disorders. The importance of improving patient care and continuing the research in this area cannot be overemphasized.

This has been one of the most important areas in human development since the early emergence of man. Human ability to communicate includes the fields of hearing and speech and underlies our progress in education, research, and politics.

Senator HILL. I see you are a smart man, you put that word politics in there.

I have never known a man to get elected to office who couldn't talk.

Dr. BORDLEY. Its importance was early recognized by man when medical specialists in this field were among the distinguished individuals mentioned for honors in the Egyptian Court more than 3,000 years ago, today.

FUNCTIONS INVOLVED

It is a field that encompasses the function of the ear, the central auditory relay stations of the brain, the complicated physiology of the pharynx and larynx, and the complexities of language and speech development.

Despite the excellent strides made in the past 7 or 8 years in training young doctors for research and teaching in this field, and the development of new laboratories and new research, the field of human communication still suffers from serious manpower shortages both in the clinical and research areas. It still faces a vast number of unsolved problems of great importance to the patient, to the teacher and to the researcher.

Since 1957, we have seen our training programs steadily improve as a result of the stimulus and the support of the National Institute of Neurological Diseases and Blindness, which has been so well backed up by your committee, sir.

MANPOWER SHORTAGE

Since 1963, these newly designed programs have increased the national manpower pool in our specialty from 5,105 to 6,295. This represents, as Dr. Kane told you, a gain of 23 percent. Unfortunately, this increase in manpower does not meet our present needs.

The population increase and the rapid development of new techniques in therapy and rehabilitation in this field have kept ahead of our production. It is estimated that another 3,000 to 4,000 new doctors should be trained in this specialty by 1970.

Of course we won't reach that goal. There should be a like increase in personnel of the paramedical specialties in the field of human communication, such as audiology, speech, and language. While the great majority of the medical and paramedical trainees will undoubtedly go into the clinical care of patients, it will be necessary to recruit at least 200 of the new doctors to enter the full-time fields of teaching and research. At present there are only 121 doctors of medicine in this category in our specialty in the United States.

Senator HILL. Only 121?

Dr. BORDLEY. Yes, sir.

In 1963 there were 66 full-time otolaryngologists, so our situation has improved but we still have not reached the point of an average of even two full-time teachers for each medical training program.

DEMANDS FOR RESEARCH

So we are well below our limit. The demands for research in our field range from studies of language development in children to the investigation of the causes of the gradual failure of the brain to process sounds so that speech can be properly understood by the aging individual. Now it is estimated that almost 25 percent of the people over 75 years of age suffer from this type of communication problem.

These research problems require study in the clinical fields of hearing, speech and language and the basic research fields of microchemistry, tissue culture, neurology, neurophysiology, electron microscopy, neuropathology, audiology, and the behavioral sciences. One of the most deficient areas for research is language. This is the forerunner of speech, and without normal language development a child's speech and intellectual functions are seriously handicapped.

Otoneurology is basic for our understanding of the disease process in deafness. Improved knowledge and the development of better techniques in this area means better and earlier diagnosis. This is a field that could be greatly helped by the formation of an intramural facility in the National Institute of Neurological Diseases and Blindness.

Here, where already there are available many laboratory facilities and personnel expert in neurological techniques, training programs and research programs could be built which would afford excellent experience for specially selected scientists now becoming available from our training programs. Here, very special research could be carried out. Individuals working in such an intramural program could late be made available for research and patient care in our other medical institutions. Such a facility is very much needed in the field of the communicative disorders.

As our training and research programs have progressed and better prepared personnel have been turned out, it has become evident that many of these highly trained young doctors could be best employed within the university environment, and I think this has been mentioned before today.

RECENT IMPORTANT ACCOMPLISHMENTS

The long-range programs which have been briefly outlined above have been used to show but a few areas where much profitable training and research can be carried out. It has not been intended to detract in any way from our present ongoing research which needs continued support and encouragement. During the past year, a number of important accomplishments have been achieved. Much has been learned about virus infections as the cause of deafness and communicative disorders.

Recent research carried out on the fetuses of sheep has shown that the larynx plays a dual role in life, one in utero, and one later. Apparently the lungs of the fetus act as glands producing a liquid substance. The larynx acts as a valve to control the flow of this liquid which is metered by the periodic opening and closing of the vocal cords permitting the passage of the substance into the mouth where it is swallowed furnishing the fetus with certain elements required for growth and development.

Very important work continues on tracing out damage to the auditory pathways which results in deafness. Research on otosclerosis, one of our main problems in hearing has pointed up the possibility of limiting the disease spread by means of the administration of fluoride.

That portion of the budget proposed by the National Committee for Research in the Neurological Disorders for the support of the National Institute of Neurological Diseases and Blindness to be devoted to hearing, speech, and the communicative disorders, is little changed from the last year. You remember last year we had so many unfunded grants that you managed to get us enough to clear up that backlog. This year we are not asking for any new funds for grants in otology because we have the backlog cleared up, but we are asking for additional funds this year in other areas.

NEED FOR EXPANDING TRAINING PROGRAMS

We must expand our training programs if we hope to continue our progress in research. In the President's budget for 1967, the funds requested for support for all of the training programs in the neurological sciences show an increase of only \$350,000. Such a small increase in funds results in an extremely dangerous situation for our programs.

Senator HILL. That wouldn't give you much increase, would it?

Dr. BORDLEY. No, sir; nothing to grow on.

FUNDS REQUESTED

For the support of research, in our specialty, \$16,750,000 is requested, and of this \$12,500,000 is allocated for the support of ongoing and new research programs; \$2,500,000 will be used for the support of ongoing and projected research centers, which have been alluded to by Dr. Maumenee, and \$1,750,000 is proposed for the building of six or seven new clinical centers.

A final item of \$58,000 is request for the support and development of the Information Center.

The citizen's budget is not excessive. It is realistic in its support for present and projected needs and it is our hope that your committee will see fit to take our proposals under serious consideration. You have through the years shown such an understanding of our field. I hope that the committee will once again take the lead in our support, and may I thank you personally for the privilege, Mr. Chairman, and honor of being here.

Senator HILL. Last year I believe you got \$116,296,000. Is that correct?

Dr. BORDLEY. Yes, sir.

Senator HILL. The budget estimate is \$128,633,000. The House allowed that. What is your request?

Dr. BORDLEY. Our request for my particular field, sir, is \$23,630,000, which is approximately what it was last year, but that included the unfunded backlog.

Senator HILL. The backlog, yes.

AMOUNT OF INCREASE

Dr. BORDLEY. It means about a \$2.5 million increase.

Senator HILL. Yes, about a \$2.5 million increase.

Is there anything you would like to add, Dr. Kane?

Mr. KANE. No, sir.

SUBCOMMITTEE RECESS

Senator HILL. You gentlemen have certainly brought us excellent testimony. I have but one regret: I wish every Member of Congress could have been here to hear it.

Thank you very much.

(Whereupon, at 4:05 p.m., Tuesday, June 6, 1967, the hearing was recessed, to reconvene June 7, 1967, at 10 a.m.)

DEPARTMENTS OF LABOR AND HEALTH, EDUCATION, AND WELFARE, AND RELATED AGENCIES APPRO- PRIATIONS FOR FISCAL YEAR 1968

WEDNESDAY, JUNE 7, 1967

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:05 a.m., in room 1224, New Senate Office Building, Hon. Lister Hill (chairman) presiding.
Present: Senator Hill.

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE REGIONAL MEDICAL PROGRAMS

STATEMENT OF DR. CORNELIUS TRAEGER, CHIEF, ARTHRITIS CLINIC, ROOSEVELT HOSPITAL; CHIEF, ARTHRITIS CLINIC, HOSPITAL FOR SPECIAL SURGERY, CORNELL MEDICAL COLLEGE

CANCER, HEART AND STROKE

Senator HILL. The committee will kindly come to order.

Dr. Traeger, will you come around, please, sir?

Dr. TRAEGER. Thank you, Mr. Chairman.

Senator HILL. We are happy to have you proceed in your own way. You are always a tremendously helpful witness.

Dr. TRAEGER. I have been around so long that you are probably tired of looking at me and even more tired of hearing me.

Senator HILL. No, no, no. No witness comes here that we appreciate hearing more. I can assure you of that.

Dr. TRAEGER. I have been asked to appear on behalf of the regional medical programs for heart, cancer and stroke.

MANDATE TO BRING RESEARCH BENEFITS TO PATIENT

The continuous impact of scientific discovery has developed a demand for the necessary measures to bring the benefits of research to the patient, to every bedside.

You have got to deliver the discoveries. We have got to link science with service, and for that reason this program of the Division of Regional Medical Programs was born with our President, and a Commission was set up to determine how best we can bring the discoveries

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in these areas of heart and cancer and stroke to everybody, to the last guy, and to the farthest doctor. This is a tremendous undertaking.

Senator HILL. It is a tremendous job, isn't it?

Dr. TRAEGER. It is a tremendous job, and we are beginning to realize it is.

I have been around Washington worrying about chronic diseases for which we know not the cause and for which there is no treatment, for a good many years, as you know. I am not interested in the infectious diseases or how to deliver a baby or how to take out an appendix.

The problems and puzzles of medicine, those are the areas which have intrigued me for a long time, and that is why I am here.

PUBLIC LAW 89-239

Now, as a result of the President's Commission, which was chaired by Dr. Michael De Bakey, whom you all know, congressional hearings were held. Out of those hearings came Public Law 89-239, which is a very simple law, three pages. Those three pages have had more impact in the medical and scientific community than anything that has ever been written.

It is a simple and short mandate to all physicians, all patients, all hospitals, all communities throughout the Nation, and I mean all, that they may have the benefits of the latest advances of the diagnosis and treatment of heart disease, and cancer, stroke, and related diseases.

Now, Mr. Chairman, this is your law. It is a glowing tribute to your wisdom, because in my opinion it will become the greatest scientific achievement in our country, if not in the whole world. The potential, the reverberation of this program is beyond our foreseeable horizons.

REGIONAL MEDICAL PROGRAM COUNCIL LABOR AND GUIDELINES

The Council of which I am proud to be a member has got the job to make that law work. Now I have been down in Washington for 17 years, since 1950. I have never worked so hard, nor have I worked with more devoted persons in my entire career.

Senator HILL. Do you want a little water?

Dr. TRAEGER. No, thank you.

You are going to have to excuse me but these problems are so close to my heart, and I am so emotional about them that I have to do the best I can.

I have been on other Councils and Commissions, as you know. The Regional Medical Program Council meets every 2 months. We have met eight or nine times already. The Council has provided guidance on program guidelines. These go all over the country to tell the people who are interested how they can originate and develop programs.

Well, what is the result? Let's go back a little bit.

PLANNING AND OPERATIONAL GRANTS

The bill was signed into law in October 1965. Our first Council meeting was in December 1965. Our first application for planning grants was received in April 1966, and the first awards for planning grants were made in June of 1966. Now, what has happened as a result

of all of that work? The Council has approved 49 applications for planning grants, and four operational grants have been made. We have covered 95 percent of the Nation's population.

HOUSE ALLOWANCE

On page 19 of the House of Representatives Report No. 271 of the 90th Congress, first session, we find the following quote: "Despite some acceleration, the program is behind schedule." And they have reduced the appropriation by \$10 million. Well, at this point, I don't know what to say.

I read you what this Council has done in a year. I think the progress has been magnificent. What do they want of us, instant medicine? Instant programs? Just how fast is fast? What is a schedule?

The President told us to work soundly, not quickly. In a year we have covered 95 percent of the population of the United States.

Senator HILL. That is a tremendous achievement, it seems to me.

Dr. TRAEGER. And yet we are cut down \$10 million because the program is behind scheduled.

PROGRAM MAGNITUDE

You see, Mr. Chairman, we are dealing here with the development of regional programs, not with project grants.

Senator HILL. Yes.

Dr. TRAEGER. Now, a region is an enormous area, thousands of square miles, and lots of people, doctors, and so on.

This is an erroneous program. A research grant thrives or falls on its own merits. Regional medical programs have no past on which to guide their efforts. This is a new deal. It doesn't involve one man at one bench with a microscope and tubes and a guinea pig. This involves every individual in the region, sick or well, every person who is interested in health.

WISE UTILIZATION OF FUNDS

These applications that have come to the Council are "yea" thick. They are long. You can't slough them off. You have to do your home work. After all, we are jealous of the taxpayers' dollar. We were given an amount of money, and we have got to spend it in the best way that we think is for the largest good.

Senator HILL. Yes.

Dr. TRAEGER. We have to worry about the regional advisory committees. Are the regions well represented? Is everybody who is interested in this program present on the advisory groups?

In spite of all that, in spite of the problems we had, we had to get the program started. The budgets were cut to the bone, sometimes by 50 percent, sometimes by 75 percent. But 49 applications were approved. They are off the ground.

DR. DE BAKY ARTICLE

Now, what is the need? Well, with your indulgence, Mr. Chairman, I would like to paraphrase an article by Dr. DeBakey, which was recently printed.

In the past 50 years, medical research has extended the life expectancy of persons from age 50 to slightly more than age 70. In the area of infectious diseases with high death rates, in cardiovascular disease, cancer, high blood pressure, tremendous progress has been achieved. All these and other miracles can be traced directly and exclusively to medical research, a good deal of which was supported by the National Institutes of Health.

INVESTMENT DIVIDENDS

No other comparable expenditure fund has yielded higher dividends in human happiness.

In cancer of the uterus, an investment of \$119 million for early detection would prevent 34,000 deaths. For every dollar spent, \$9 would accrue to the economy.

Where can you get a better investment than this?

These examples could be extended indefinitely. You know the story of retrolental fibroplasia, these babies being born blind, and a blind baby is a deficit to the community forever.

Senator HILL. Once blind, always blind.

Dr. TRAEGER. That is right. For \$800,000, retrolental fibroplasia has been wiped out.

All the investment in biomedical research would have paid for itself in that one job.

RESEARCH REQUISITE

But can we be satisfied with a job only started when there is so much more to be done? We have still not uncovered some of the very basic questions about the human body. We still don't know, for example, why the heart beats, why blood clots, why some cells grow wild, or why some babies are born deformed.

We don't even understand the mechanism of pain relief of one of the oldest and most widely used drugs—aspirin.

How can we claim leadership in health or criticize Government expenditures for this purpose when millions of Americans still suffer from heart disease, cancer, and stroke, and related diseases?

Cancer will strike 49 million Americans who are alive right now.

Senator HILL. 49 million?

Dr. TRAEGER. 49 million are going to have cancer.

A national health survey of people in the labor force indicated that 52 percent of them had one or more chronic conditions. In 1966, and this is a report by the Health and Insurance Institute, a total of \$1,137 million was paid out to persons disabled by injury or illness. These are exclusive of payments made by Federal, State, and local welfare programs.

Is this good health?

The only conclusion permitted is that any appropriation short of an all-out attack on disease and disability is far too little. Even without further expansion of knowledge and technology, but with the full application of current skills and presently available knowledge, about half of those who now develop cancer could be saved—a quarter of a million lives a year. This is one of the purposes of the regional medical programs.

The question is not whether we can afford to spend the money to accomplish this end, but whether we can afford not to.

PROGRAM EMPHASIS

Now, let's look at the program and its problems, the regional medical program.

This is an enormous undertaking, a completely new concept. Yet it is and can be stated in simple terms: What are the stress points?

First, the patient. This is where the emphasis has to lie. Everyone who needs diagnosis and treatment.

Second, is the practicing physician, the doctor who delivers the diagnosis and treatment.

The third is cooperation, and the fourth is flexibility.

It is just that simple. The whole bill, as you well know, is three pages long. It is the smallest document that has had the most tremendous impact in the history of the health world. You ought to be proud of it.

PRACTICING PHYSICIAN AND PATIENT

Now let us talk about the practicing physician. There are a lot of people who play a fiddle, but only a few Heifetzes are around.

There are a lot of doctors, 200,000 of us in the United States. We are not all as good as we ought to be. We have a tremendous burden placed on us to keep up. To my mind, if I stopped reading for 30 days, I would be an obsolete doctor.

Now, every doctor in the country is busy with sick people. Some of them are so busy they haven't even got the time to read the paper or listen to a phonograph record, let alone keep up with medicine. Tremendous demands are made on them.

A lot of doctors have no hospital connections. They can't take their patients to where they can get the best treatment. They have got to either go to a proprietary hospital or find some doctor who has hospital connections and give them the patient.

The doctor in the hinterlands is at a disadvantage and, Mr. Chairman, we have hinterlands not only in the rural corners of Idaho and Montana, but we have got them right in the heart of New York City. There are just as many hinterlands in the middle of any large city as there are in most remote areas. This is one of the problems that we have.

TOTAL KNOWLEDGE AVAILABLE TO ALL DOCTORS

Now, the purpose of this act is to make it possible for every doctor to have available everything that is presently known and available for diagnosis and treatment of these dread diseases. Now, this demands a mechanism which is new and untried. If every doctor and every patient is not included, the whole program is a bust. It has got to be done that way.

This is a call on the medical manpower, the whole manpower in this whole country. Everybody has to be affected by it, or it is an incomplete program.

COOPERATION

Now the third key word is "cooperation."

There are 200,000 physicians and 7,000 hospitals in the United States. They vary all the way from the tiny little community hospital to the large university medical centers. The medical societies, voluntary societies such as the American Cancer Association and American Heart Association, labor and welfare groups, nursing homes, everybody who is interested, has to be part of this cooperative effort. This is a whole series of cogs, and you can't leave out a tooth or the whole thing comes to a grinding halt.

It also demands cooperation between the regional medical programs and other parts of the National Institutes of Health who are concerned with these problems, like the National Heart Institute, the Neurological Diseases and Blindness Institute, the Institute for General Medical Sciences, and the National Center for Chronic Disease Control.

All of these people, all of these Institutes have liaison members at our council meetings. They are there, they know what is going on, and they know where conflicts may arise, and they know where duplication may arise.

This is a tight organization. This program, and I have got to keep repeating this, will affect every person in this country who is involved in any way with the problems of heart, cancer, stroke, and related diseases. This is a great demand on the medical manpower of the Nation.

It is in this area of cooperation that most of the difficulty lies. The medical profession was first puzzled by the regional medical programs. Many of them were suspicious, and some of them were resentful about the program. Medical schools in the past have had very little or practically no relationship to the community in which they existed. There were isolated, parochial islands of endeavor without any relation to the community at all.

SPECTER OF GOVERNMENT CONTROL OF MEDICINE

The specter of Government control of medicine was of concern. But as time went on and persons who were interested learned more about the program, and when they read the act carefully and found that the program would operate, and I quote now from the act:

... without interfering with the patterns or with the methods of financing of patient care or professional practice or with the administration of hospitals and in cooperation with practicing physicians, medical center officials, hospital administrators and representatives from appropriate voluntary health agencies.

NATIONAL ENTHUSIASM

When they really read it and understood it, then they got interested, and finally they got enthusiastic about it. It is amazing how interested they got. For example, in a formal presentation which I beg permission to present to you—

Senator HILL. Sure.

Dr. TRAEGER. On page 5, Dr. Henry Clark, who is the program coordinator of the program in Connecticut, says:

Across the country the interest in regional medical planning stimulated by Public Law 89-239 has exceeded the wildest dreams of its proponents. In many universities concern for the broad field of health care is rapidly gaining in respectability. Furthermore, dialogues are in progress amongst spokesmen for medical schools, medical societies, hospital associations, health departments and other groups. These talks, the likes of which never have been heard before, are almost certain to produce better working relationships among the various interests and better medical care for the patients they serve.

NONGOVERNMENT SUPERIMPOSITION

This is not a program superimposed by Washington on the country. In the contrary, these programs must originate at the local level, in the regions themselves. Control of the program lies with the doctors, and with the local advisory boards. Most decisions in the regional medical programs lie outside the Federal Government.

The Division of Regional Medical Programs provides the funds after determining that the programs presented meet the very flexible requirements set up by Congress. By law the Division also evaluates the progress of these programs.

This approach has been frustrating to those who have sought specific and detailed guidance on the exact nature of the regional medical programs. We have no hidden agenda, no Federal blueprint which would be imposed on the region. I can remember one of the first meetings I went to in New York City where the whole problem of regional medical programs was brought up, and one of the deans of the biggest medical center in that city got up and said, "Take me to your leader." You know, you can get quite alarmed and disappointed listening to that.

These deans in New York, in every big city, are so parochial, and are so scared that they are going to have to do something they never did before it becomes almost appalling. I have talked myself blue in the face in New York.

However, they are learning. Not only learning, but they are now getting enthusiastic. But it took an awful lot of talk to make them understand.

Senator HILL. A hard job.

Dr. TRAEGER. At one of the meetings I went to, one of the hospital administrators of an enormous hospital in New York said, "Why do we need this? We are doing a good job with our cancer patients, with our stroke patients?" Well at that point I lost my temper and I said, "Now, look, if you think you are doing everything you can do for these patients, go home, forget about it, but if you think there is one little thing more that could be done, stay here and get interested and get going."

He didn't like it much, but that is what has happened. But then I don't scare easily.

FLEXIBILITY

The last major element of this simple little bill is flexibility. It had to be kept flexible.

Senator HILL. Sure.

Dr. TRAEGER. We had no past experiences to go on. This is necessary because of the diversity and multiplicity of the programs and the fact that each region has its unique problems. The problems of Texas are

certainly entirely different from the problems of Pennsylvania, and so forth.

Flexibility was built into the law to encourage innovation and adaptation in the development of the regional medical programs, and so that programs will be particularly pertinent to the regional needs, their resources, and their existing medical patterns. Flexibility was put in to encourage initiative and creativity through the action of the people and the institutions involved in the programs themselves.

Tinsley Harrison, at the University of Alabama Medical Center said:

It is my opinion that the fate of the regional medical programs will ultimately be one of the factors and perhaps the most important one that will determine whether we will be able to retain in the United States our present system of private medical practice.

Senator HILL. He is a pretty thoughtful man, too.

Dr. TRAEGER. Sure; he sure is. There is no question about that. I have known him for a long time.

CENTRIFUGAL FLOW OF INFORMATION

These new programs emphasize centrifugal flow of information and services. No longer will the critically ill patient need to be transported to a medical center or a large urban hospital.

Information and service flows out from the central area to the most rural areas, and conversely the problems and interests of the rural local practitioner and the community hospitals have to go back to the center to be taken into account.

This is a new, enormous innovative program, the like of which has never been known before. For example, at the local level, folks are talking to each other who never did so before.

For example, in New York City, there are seven medical schools, seven deans, and one of them couldn't care less what the other fellow was doing. They are talking now and they are talking good.

Senator HILL. Good, that is very good.

Dr. TRAEGER. Barriers of autonomy and parochialism have broken down, and cooperation has become the watchword.

PROGRAM FAILURE VIS-A-VIS PROGRAM SUCCESS

If the programs have not done the job, if the impact has not yet been felt in the most remote areas, and to the last patient in the "back forties," cut the appropriations and you can be sure the job will never get done. Adequate funding with provisions for continuity of effort, in order to attract the best leadership manpower, will guarantee the success of the regional medical programs.

PROGRAM PHYSICIANS AND COORDINATORS

I would like to submit for the record two lists.

Senator HILL. All right, sir. We would be glad to have them.

Dr. TRAEGER. People who are accepting positions as the coordinators of the programs; their competence, caliber, and quality are outstanding. Here they are, 49 topflight men. All you have to do is read who they are, and you know the programs are going to work.

Senator HILL. We will put those in the record at this point.
 Dr. TRAEGER. Thank you, sir.
 (The list follows:)

PROGRAM COORDINATORS FOR REGIONAL MEDICAL PROGRAMS

Regional designation	Preliminary planning region	Program coordinators
Alabama.....	Alabama.....	Joseph F. Volker, D.D.S., vice president for health affairs, University of Alabama Medical Center, 1919 7th Ave. South, Birmingham, Ala.
Albany, N.Y.....	Northeastern New York and portions of southern Vermont and western Massachusetts.	Frank M. Woolsey, Jr., M.D., associate dean, Albany Medical College of Union University, 47 New Scotland Ave., Albany, N.Y.
Arizona.....	Arizona.....	Merlin K. Duval, M.D., acting dean, University of Arizona College of Medicine, Tucson, Ariz.
Arkansas.....	Arkansas.....	Winston K. Shorcy, M.D., dean, University of Arkansas School of Medicine, 4301 West Markham St., Little Rock, Ark.
Bistate.....	Eastern Missouri and southern Illinois.	William H. Danforth, M.D., vice chancellor for medical affairs, Washington University, 660 South Euclid Ave., St. Louis, Mo.
California.....	California.....	Paul D. Ward, executive director, California Commission on Regional Medical Programs, 655 Sutter St., San Francisco, Calif.
Central New York.....	Syracuse, N.Y., and 15 surrounding counties.	Richard H. Lyons, M.D., professor and chairman, Department of Medicine, State University of New York, Upstate Medical Center, 766 Irving Ave., Syracuse, N.Y.
Colorado-Wyoming.....	Colorado and Wyoming.....	C. Wesley Eisele, M.D., associate dean for postgraduate medical education, University of Colorado, 4200 East 9th Ave., Denver, Colo.
Connecticut.....	Connecticut.....	Henry T. Clark, Jr., M.D., program coordinator, Connecticut regional medical program, 272 George St., New Haven, Conn.
Florida.....	Florida.....	Malcolm J. Ford, M.D. (acting program coordinator), Post Office Box 210, Jacksonville, Fla.
Georgia.....	Georgia.....	J. Gordon Barrow, M.D., coordinator for Georgia regional medical programs, Medical Association of Georgia, 938 Peachtree St. N.E., Atlanta, Ga.
Greater Delaware Valley.....	Eastern Pennsylvania and portions of New Jersey and Delaware.	William C. Spring, Jr., M.D., University City Science Center, 3401 Market St., Philadelphia, Pa.
Hawaii.....	Hawaii.....	Windsor C. Cutting, M.D., dean, College of Health Sciences, 2444 Dole St., Honolulu, Hawaii.
Illinois.....	Illinois.....	Leon O. Jacobson, M.D., dean, University of Chicago School of Medicine, and chairman, Coordinating Committee of Medical Schools and Teaching Hospitals of Illinois, 950 East 59th St., Chicago, Ill.
Indiana.....	Indiana.....	George T. Lukemeyer, M.D., associate dean, Indiana University School of Medicine, Indiana University Medical Center, 1100 West Michigan St., Indianapolis, Ind.
Intermountain.....	Utah and portions of Wyoming, Montana, Colorado, Idaho, and Nevada.	C. Hilmon Castle, M.D., associate dean and chairman, Department of Postgraduate Education, University of Utah, Salt Lake City, Utah.
Iowa.....	Iowa.....	Robert C. Hardin, M.D., dean, University of Iowa College of Medicine, Iowa City, Iowa.
Kansas.....	Kansas.....	Charles E. Lewis, M.D., program coordinator, Kansas Regional Medical Program, University of Kansas Medical Center, Kansas City, Kans.
Louisiana.....	Louisiana.....	Joseph A. Sabatier, M.D., president, Louisiana State Medical Society, 134 North 19th St., Baton Rouge, La.
Maine.....	Maine.....	George T. Nilson, acting field director, Bingham Associates Fund, Maine Department of Health and Welfare, Augusta, Maine.
Maryland.....	Maryland.....	Thomas B. Turner, M.D., dean, Johns Hopkins University School of Medicine, 725 Wolfe St., Baltimore, Md.
Memphis.....	Western Tennessee, northern Mississippi and portions of Arkansas, Kentucky, and Missouri.	James W. Culbertson, M.D., professor and cardiologist, Department of Internal Medicine, University of Tennessee College of Medicine, Memphis, Tenn.
Metropolitan Washington, D.C.	District of Columbia and contiguous counties in Maryland (2) and Virginia (2).	Thomas W. Mattingly, M.D., program coordinator, District of Columbia Medical Society, 2007 Eye St. N.W., Washington, D.C.

PROGRAM COORDINATORS FOR REGIONAL MEDICAL PROGRAMS—Continued

Regional designation	Preliminary planning region	Program coordinators
Michigan-----	Michigan-----	D. Eugene Sibery, executive director, Greater Detroit Area Hospital Council, 966 Penobscot Bldg., Detroit, Mich.
Mississippi-----	Mississippi-----	Guy D. Campbell, M.D., regional coordinator, Mississippi Regional Medical Program, University of Mississippi Medical Center, 2500 North State St., Jackson, Miss.
Missouri-----	Missouri-----	Vernon E. Wilson, M.D., dean, School of Medicine, University of Missouri, Columbia, Mo.
Mountain-----	Idaho, Montana, Nevada, and Wyoming.	Kevin P. Bunnell, Ed. D., associate director, Western Interstate Commission for Higher Education, University East Campus, 30th St., Boulder, Colo.
Nebraska-South Dakota-----	Nebraska and South Dakota-----	Harold Morgan, M.D., Nebraska State Medical Association, 1315 Sharp Bldg., Lincoln, Nebr.
New Jersey-----	New Jersey-----	Alvin A. Florin, M.D., M.P.H., program coordinator, New Jersey State Department of Health, Health-Agriculture Bldg., Post Office Box 1540, John-Fitch Plaza, Trenton, N.J.
New Mexico-----	New Mexico-----	Reginald Fitz, M.D., dean, University of New Mexico School of Medicine, Albuquerque, N. Mex.
New York metropolitan area-----	New York City, Westchester, Nassau, and Suffolk Counties.	Vincent dePaul Larkin, M.D., acting program coordinator, New York Academy of Medicine, 2 East 108d St., New York, N.Y.
North Carolina-----	North Carolina-----	Marc J. Musser, M.D., executive director, North Carolina regional medical program, Teer House, 4019 North Roxboro Rd., Durham, N.C.
North Dakota-----	North Dakota-----	Theodore H. Harwood, M.D., dean, School of Medicine, University of North Dakota, Grand Forks, N. Dak.
Northern New England-----	Vermont and 3 counties in northeastern New York.	John E. Wennberg, M.D., program coordinator, northern New England regional medical program, University of Vermont Medical School, Burlington, Vt.
Northlands-----	Minnesota-----	J. Minnott Stickney, M.D., Minnesota State Medical Association, 200 1st St. SW., Rochester, Minn.
Ohio State-----	Central and southern two-thirds of Ohio (61 counties, excluding Metropolitan Cincinnati area).	Richard L. Melling, M.D., dean, Ohio State University College of Medicine, 410 West 10th Ave., Columbus, Ohio.
Ohio Valley-----	Greater part of Kentucky and contiguous parts of Ohio, Indiana, and West Virginia.	William H. McBeath, M.D., director, Ohio Valley regional medical program, Rosalie Rd., Route No. 2, Lexington, Ky.
Oklahoma-----	Oklahoma-----	Ben I. Heller, M.D., University of Oklahoma Medical Center, 800 Northeast 13th St., Oklahoma City, Okla.
Oregon-----	Oregon-----	M. Roberts Grover, M.D., director, continuing medical education, University of Oregon, School of Medicine, 3181 Southwest Sam Jackson Park Rd., Portland, Ore.
Rochester, N.Y.-----	Rochester, N.Y., and 11 surrounding counties.	Ralph C. Parker, Jr., M.D., Clinical associate professor of medicine, University of Rochester School of Medicine & Dentistry, Rochester, N.Y.
South Carolina-----	South Carolina-----	Charles P. Summerall, III, M.D., associate in medicine (cardiology), Department of Medicine, Medical College Hospital, 55 Doughty St., Charleston, S.C.
Susquehanna Valley-----	Block of 24 counties centered around Harrisburg, Hershey (the Susquehanna Valley).	Richard B. McKenzie, Council on Scientific Advancement, Pennsylvania Medical Society, Taylor Bypass and Eiford Rd., Lemoyne, Pa.
Tennessee, midsouth-----	Eastern and central Tennessee and contiguous parts of southern Kentucky and northern Alabama.	Stanley Olson, M.D., professor of medicine and director, Tennessee midsouth regional medical program; Vanderbilt University, Baker Bldg., 110-21st Ave., South Nashville, Tenn.
Texas-----	Texas-----	Charles A. LeMaistre, M.D., vice chancellor for health affairs, University of Texas, Main Bldg., Austin, Tex.
Tristate (Massachusetts, Rhode Island, and New Hampshire.)-----	Massachusetts, Rhode Island, and New Hampshire.	Mae V. Edds, Jr., Ph. D., Harvard Medical School, 25 Shattuck St., Boston, Mass.
Virginia-----	Virginia-----	Kinlock Nelson, M.D., dean, Medical College of Virginia, 12th and Broad St., Richmond, Va.
Washington and Alaska-----	Washington and Alaska-----	Donal R. Sparkman, M.D., associate professor of medicine, University of Washington, School of medicine, Seattle, Wash.
West Virginia-----	West Virginia-----	Clark K. Sletch, M.D., dean, School of Medicine, West Virginia University, Medical Center, Morgantown, W. Va.

PROGRAM COORDINATORS FOR REGIONAL MEDICAL PROGRAMS—Continued

Regional designation	Preliminary planning region	Program coordinators
Western New York.....	Buffalo, N. Y., and 7 surrounding counties.	Douglas M. Surgeoner, M.D., dean, School of Medicine, State University of New York at Buffalo, 101 Capen Hall, Buffalo, N. Y.
Western Pennsylvania..	Pittsburgh, Pa., and 28 surrounding counties.	Francis S. Cheever, M.D., dean, School of Medicine, University of Pittsburgh, M-240 Scaife Hall, 3550 Terrace St., Pittsburgh, Pa.
Wisconsin.....	Wisconsin	John S. Hirschboeck, M.D., program coordinator, Wisconsin Regional Medical Programs, Inc., Room 1103, 110 East Wisconsin Ave., Milwaukee, Wis.

ADVISORY GROUP OF NEW YORK METROPOLITAN AREA REGIONAL MEDICAL PROGRAM

Dr. TRAEGER. I would like to submit for the record the membership of the advisory group to the New York metropolitan region medical program. This group includes seven deans of medical schools, representative of 10 medical societies, three public health officials and 13 members of the public. These involved and dedicated people are necessary for the success of the program.

Senator HILL. We will put them in the record at this point.
(The information follows:)

DEANS OF THE MEDICAL SCHOOLS AND DIRECTORS OF ACADEMY OF MEDICINE

- John E. Dietrick, M.D.—Cornell University—The Medical College, 1300 York Avenue, New York, N.Y. 10021
 Joseph K. Hill, Ph. D.—Downstate Medical Center—College of Medicine, 450 Clarkson Avenue, Brooklyn, N.Y. 11203
 George James, M.D.—Mount Sinai School of Medicine, Fifth Avenue at 100th Street, New York, N.Y.
 Marcus D. Kogel, M.D.—Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, N.Y. 10461
 H. Houston Merritt, M.D.—Columbia University—College of Physicians & Surgeons, 630 West 168th Street, New York, N.Y. 10032
 Lawrence B. Slobody, M.D.—New York Medical College, Fifth Avenue at 106th Street, New York, N.Y. 10029
 Lewis Thomas, M.D.—New York University—School of Medicine, 550 First Avenue, New York, N.Y. 10016

NEW YORK ACADEMY OF MEDICINE

- Howard Craig, M.D.—Director
 John L. Madden—President
 J. E. McCormack, M.D.—Associate Director

HOSPITAL ADMINISTRATORS

- Sister Anthony Marie—St. Vincents Hospital, 153 West 11th Street, New York, N.Y. 10011
 Jack C. Haldeman, M.D.—Hospital Review and Planning Council, 3 East 54th Street, New York, N.Y. 10022
 Peter Rogatz, M.D.—Long Island Jewish Hospital, 270-05 76th Avenue, New Hyde Park, N.Y. 11201
 Mr. Vernon Stutzman, Director—Methodist Hospital, 506 Sixth Street, Brooklyn, N.Y. 11215
 Mr. Peter B. Terenzio, Director—Roosevelt Hospital, 428 West 59th Street, New York, N.Y. 10017
 John V. Connorton, Ph. D., Executive Vice President—Greater New York Hospital Association, Three East 54th Street, New York, N.Y. 10022

OTHER HEALTH PROFESSIONS

- Jack Barsh, D.D.S., President—First District Dental Society Statler-Hilton Hotel, 7th Avenue at 33rd Street, New York, N.Y. 10001
 Miss E. C. Lambertsen, Director—Division of Nursing Education, Graduate School of Nursing, Columbia University, 525 West 120th Street, New York, N.Y. 10027
 Mrs. Eva M. Reese, Executive Director—Visiting Nurse Service of New York, 107 East 70th Street, New York, N.Y. 10021
 Melvin V. Weiss, D.O., President—Osteopathic Society of the City of New York, 38 East 61st Street, New York, N.Y. 10021

MEMBERS OF THE PUBLIC FAMILIAR WITH THE NEEDS FOR THE SERVICES PROVIDED UNDER THE PROGRAM

- Mr. Herman Badillo—President of the Borough of the Bronx, 851 Grand Concourse, Bronx, New York 10451
 Mr. Benjamin Bittenweiser—Kuhn, Loeb & Company, 40 Wall Street, New York, N.Y. 10005
 Mr. James R. Dumpson—New York City Council Against Poverty, 100 Church Street, New York, N.Y. 10007
 Mr. Leo Gottlieb, LLB—Cleary, Gottlieb, Steen and Hamilton, 52 Wall Street, New York, N.Y. 10005
 Mrs. Harold D. Harvey—168 East 95th Street, New York, N.Y. 10007
 Mrs. Mary Lasker—29 Beekman Place, New York, N.Y. 10022
 Mr. Malcolm Muir—444 Madison Avenue, New York, N.Y. 10022
 Mrs. Henry T. Randall—250 West 73rd Street, New York, N.Y. 10021
 Mr. Alex Rose, President—United Hatters, Cap and Millinery Workers International Union, 245 Fifth Avenue, New York, N.Y. 10016
 Mr. David Scher, President—Stroock & Stroock & Lavan, 61 Broadway, New York, N.Y. 10066
 Mr. Benno C. Schmidt LLB—J. H. Whitney & Company, 630 Fifth Avenue, New York, N.Y. 10020
 Mr. Seymour N. Siegel—Director of Radio Communications, 2500 Municipal Building, New York, N.Y. 10007
 Rev. M. Moran Weston, Rector—St. Philips Episcopal Church, 215 West 133rd Street, New York, N.Y.

MEDICAL SOCIETIES

- J. L. S. Holloman, Jr., M.D.—National Medical Association, 2160 Madison Avenue, New York, N.Y. 10037
 John A. Lawler, M.D.—The New York County Medical Society, 10 Columbus Circle, New York, N.Y. 10019
 Isidore Sternlieb, M.D.—Bronx County Medical Society, 1400 East Fordham Road, Bronx, N.Y. 10458
 Lawrence Ames, M.D.—The Kings County Medical Society, 1313 Bedford Avenue, Brooklyn, N.Y. 11216
 Peter V. Gugliuzza, M.D.—Medical Society of the County of Queens, 112-25 Queens Boulevard, Forest Hills, N.Y. 11375
 Charles Thom, M.D., President-Elect—Richmond County Medical Society, 100 Central Avenue, Staten Island, N.Y. 10301
 Maurice L. Woodhull, M.D.—Medical Society of the County of Westchester, Purchase, New York 10577
 Marjorie H. Greene, M.D.—Nassau County Medical Society, 35 Barter Lane, Hicksville, N.Y.
 Milton Gordon, M.D.—Medical Society of the County of Suffolk, 44 First Avenue, Bay Shore, N.Y. 11706
 Stanley H. Greenwald, M.D.—American Academy of General Practice, 325 East 79th Street, New York, N.Y. 10017

VOLUNTARY HEALTH AGENCIES

- Gray H. Twombly, M.D.—American Cancer Society, New York City Div., 219 East 42nd Street, New York, N.Y. 10017
 Alfred P. Fishman, M.D., President—New York Heart Association, 10 Columbus Circle, New York, N.Y. 10019

OTHER ORGANIZATIONS, INSTITUTIONS AND AGENCIES CONCERNED WITH ACTIVITIES
THE KIND TO BE CARRIED ON UNDER THE PROGRAM

Howard Brown, M.D.—Administrator Health Services, Department of Health,
125 Worth Street, New York, N.Y. 10013

Mr. Joseph Terenzio, Commissioner of Hospitals, 125 Worth Street, New York,
N.Y. 10013

Marvin E. Perkins, M.D.—Commissioner of Mental Health, 93 Worth Street,
New York, N.Y. 10013

Dean Alex Rosen, Ph. D.—N.Y.U. Graduate School of Social Work, Washington
Square, New York, N.Y. 10003

FUNDING REQUISITE

Dr. TRAEGER. The momentum of this program must not be stopped by uncertainty of continued support.

Operational grants are now going to be considered. Up to now it has been planning. As I say, we have cut planning to the bone, and they are beginning to understand now that there is not enough money even to complete their planning. But in operational grants we are really in trouble, because here you need expensive hardware, diagnostic instrumentation, computers, communication networks.

But how are you going to carry out the mandate of the law, the best for the least—and I don't mean the least money, but the least practicing physician.

These moneys must be made available. We cannot abide budget cuts at this time. This is your program. This is a program that is going to take \$200 million if it is going to be effective, and if it is not going to be effective, forget it.

This program has the most tremendous potential in health that the world has ever known, and you cannot finance it on peanuts, and you can't be whittling down on the edges. You can't expect people who have spent their lives in one field to quit what they are doing and go on into this kind of a program without some reasonable assurance that it is going to get somewhere, and that it is going to be adequately financed.

The appropriation level for the first 2 years and the President's budget request for the third year has been half the amount authorized in the law. I don't want to settle for the level of the President's budget request, and I hope we won't have to, but if we got it, we got it.

Senator HILL. It is a bare minimum, isn't it?

Dr. TRAEGER. Certainly.

I share with you, Mr. Chairman, the pride you must feel in having launched the legislation which started this nationwide program. I and my associates of the National Advisory Council have gotten the program off the ground. It is launched. Now it has to be adequately supported. At this point, I stop. This is where my work ends, and yours begins.

Thank you, Mr. Chairman.

Senator HILL. I will say this: You have done a very good job here this morning. You have done a beautiful job; beautiful.

Dr. TRAEGER. Thank you, sir.

Senator HILL. Are you going to talk to us about arthritis, Doctor?

Dr. TRAEGER. With your permission I would like to have Dr. Gutman start the presentation.

(The prepared statement follows:)

It is with great pleasure that I appear before you today to speak on behalf of Regional Medical Programs. My name is Cornelius Traeger and I am a practicing physician, having obtained my medical degree at the Columbia University College of Physicians and Surgeons. I am on the staffs of the Hospital for Special Surgery and Roosevelt Hospital in New York City and am a member of the faculty of the Cornell University Medical College. I have been associated in the past with programs of United States Public Health Service and National Institutes of Health as a special consultant to the Surgeon General and as a member of the National Advisory Councils of the National Institute of Neurological Diseases and Blindness and the National Institute of Arthritis and Metabolic Diseases. I was a member of the Senate committee of consultants on medical research. I am currently a member of the National Advisory Council on Regional Medical Programs.

First, I would like to express my appreciation for the privilege of appearing before you today. You will recall that I have had the opportunity to meet with you a number of times in the past to discuss activities and opportunities in biomedical research. Today, it is a privilege to be able to review with you a major new program that can bring the fruits of these research efforts to physicians and people throughout this great nation.

The last year has been an historic one in the development of health programs in this country. During this year, we have seen the beginning of Regional Medical Programs in all parts of the country. This has been a tremendous achievement that promises great benefits for practicing physicians, medical institutions, and their patients.

I have been a member of the National Advisory Council on Regional Medical Program since its organization in December 1965. Let me assure you this Council is an outstanding group of men. As you know, Dr. Michael DeBakey, who was Chairman of the Presidents' Commission on Heart Disease, Cancer and Stroke, is a member of the Council. In addition, the Council includes a number of other national experts in heart disease, cancer, stroke, medicine, hospital administration and public affairs.

The Council has devoted serious and intensive consideration to the development of this new, innovative program. It has met formally eight times, about once every two months. It has considered and advised on the *Program Regulations* and *Guidelines* that set the direction for the national program. It has reviewed over 80 applications for funds and recommended that 49 planning grants and 4 operational grants be approved.

The primary purpose of Regional Medical Programs is very simple. It is to help make sure that physicians and patients in all hospitals and communities have the benefits of the latest advances in the diagnosis and treatment of heart disease, cancer, stroke and related diseases.

The Congress recognized this principle when it passed the Public Law 89-239. This law is notable for its simplicity and brevity. The law goes directly to the point in the statement of purpose in the first section. This reads "to afford to the medical profession and the medical institutions of the Nation, through such cooperative arrangements, the opportunity of making available to these patients the latest advances in the diagnosis and treatment of these diseases."

There are two other key words that describe this Program—"flexibility" and "cooperation." Both of these ideas were emphasized by the Congressional committees in their reports on this program two years ago. For example, the Report of the Senate Committee on Labor and Public Welfare stated: "The bill is drafted to provide the flexibility necessary to respond to local needs and to take advantage of local creativity in formulating new methods for more fruitful utilization of the medical resources found within each region." The program must be flexible because of the diversity and multiplicity of programs and problems in different parts of the country. This program is based on existing institutions and activities. New ways are sought to strengthen these resources so they are better able to take advantage of new knowledge and techniques. Local groups must have the flexibility to develop their own solutions to meet their particular needs.

These new programs emphasize both the *centrifugal* and *centripetal* flow of information and services. They must move out from the central areas in a region to its most peripheral rural areas. Similarly, information on the problems and interests of local practitioners must flow back to the center to be taken into account in planning future research and educational activities.

"Cooperation" is another key word. In fact, "cooperative arrangements" are the basis of the law—and the most important and unique feature of this program. By "cooperation," I mean the active participation and involvement of *all* the individuals and institutions concerned with these great diseases. This includes medical societies, hospital groups, and affiliates of the American Cancer Society and the American Heart Association. It also includes health officers, hospital administrators (including persons from proprietary hospitals), members of the public and all other interested parties.

The program must be developed in cooperation with many other programs. In the National Advisory Council on Regional Medical Programs, we have sought to meet this need through liaison members from other interested Councils at the National Institutes of Health. These liaison members attend all our meetings. They include members of the Councils of the National Heart Institute, the National Cancer Institute, the National Institute of Neurological Diseases and Blindness and the National Institute of General Medical Sciences. This group includes many men who are very familiar to members of this Committee, such as Dr. Sidney Farber and Dr. Edward Dempsey.

Similar cooperative relationships are being developed at the staff levels. The National Institutes of Health staff is working closely with other programs of the Public Health Service. Most importantly, the staffs of the developing programs in the Regions are joining together with persons responsible for related programs to discuss common interests and problems. These developments at the regional level are, of course, the most important for there is where the work must be done and cooperation made effective.

As I indicated at the beginning of this statement and as Dr. Shannon and Dr. Marston have reported to you, Regional Medical Programs are underway throughout the country. The program is off on a sound basis and is moving very satisfactorily. There is a great accomplishment in such a short period of time.

There is a very unfortunate implication in the House Committee's explanation of its \$10 million reduction request which might be taken to suggest that the program has not made rapid enough progress. I have been closely associated with this program as a member of its National Advisory Council from its very beginning and I can tell you that it has made magnificent progress in getting this new and exciting program off the ground. It has surpassed what I thought possible a year ago.

There are already clear and compelling indications that this program has brought about a ferment of interest in the health world. Every area of the country and every significant component of our health resources has felt the dynamic impact of the Regional Medical Program activity. It has involved in every medical school, the medical associations, the official health agency in state and metropolitan area, and virtually every major hospital association. Every national health organization has had major sessions devoted to the program, and every major health journal has discussed it.

Dr. Henry Clark described the progress of the Regional Medical Programs in the following terms: "Across the country the interest in regional medical planning stimulated by P.L. 89-239 has exceeded the wildest dreams of its proponents. In many universities concern for the broad field of health care is rapidly gaining in respectability. Furthermore, dialogues are in progress among spokesmen from medical schools, medical societies, hospital associations, health departments, and other groups. These talks, the likes of which have never been heard before, are almost certain to produce better working relationships among the various interests and better medical care for the patients the serve."

It is of critical importance, however, that this great initial momentum be sustained. Mention of the great vitality of this early progress stems from the fact that medical men of top-flight calibre have been fascinated by the tremendous potential of this new program and have gotten behind it. But they need reassurance and they need support. And this can only come from the Congress and the people of the United States.

The program now needs the time and funds to move ahead and build on the start that has been made. Experience to date has demonstrated the Public Law 89-239 is a good law. The cooperative program we have begun can bring many benefits to the medical professions and the American people. But each Regional Medical Program must have the resources to develop its own approach and activities to meet its particular conditions.

However, the task ahead is a big and complex one. We must not underestimate the difficulties and obstacles that must be overcome to realize the potential that

is possible. For example, it is necessary to obtain the active participation of all the major health resources of the country to accomplish this job. As you know, this means more than 200,000 physicians, over 7,000 hospitals and many hundreds of other agencies.

Such a goal cannot be accomplished easily and quickly. Many of these parties are not used to working together. There are strong traditions of autonomy and even competition between some in the health field. Experiences in my home town, New York City, that is, have demonstrated how complex and time-consuming it is for organizations and institutions to find new ways of working together.

These problems are especially difficult in the large urban areas. For example, in Greater New York, only about one-third of the hospitals have university hospital affiliations of any type. A large number of practicing physicians in Greater New York and other large urban centers have no hospital connections and are forced to use either proprietary hospitals or to send their patients to physicians who do have hospital appointments. If we are to emphasize services to *all* the people, these problems must be recognized and overcome.

However, important progress has been made in planning to these problems in New York, in other large metropolitan areas and in all other areas. One of the most significant forms of this progress has been the Regional Advisory Groups. It has been particularly reassuring to us on the National Advisory Council on Regional Medical Programs to note the high quality of the people that are accepting appointments.

For example, I should like to submit for the record the membership of the Advisory Group to the New York Metropolitan Regional Medical Programs. You will note this group includes the deans of the 7 medical schools in the city, representatives of 10 medical societies, 6 hospital administrators, 3 public health officials and 13 members of the public.

This group is an example of what has happened. There are real working committees. Under the law, they must approve all applications for operational funds. They have the responsibility to provide continuing advice and assistance to both the official grants and all the other organizations participating in the regional program.

Because of the importance of these groups, it is especially important that they be well organized. In its review of grant applications, the National Advisory Council on Regional Medical Programs has given continuing major attention to the composition of these Regional Advisory Groups. Some applications have been returned with the suggestion that additional persons be added to ensure adequate representation of certain interested groups and the public as a whole. We are also concerned that arrangements be made for rotation in terms of membership so that new members may be added periodically on an established schedule.

Another most significant aspect of the progress to date has been the quality of the persons who are accepting positions as Coordinators and Directors of Regional Medical Programs. I wish that each of these men have an opportunity to appear before you. I know that you would be greatly impressed with their competence and calibre. I should also like to submit for the record a listing of these individuals who now hold these positions. It is especially reassuring that the initial development of Regional Medical Programs is under such local leadership.

The participation and commitment of these individuals, on the Regional Advisory Groups and in key leadership positions, is crucial. However, similar involvement and dedication is called for from individuals representing all types of health agencies. A good beginning has been made. But there has not yet been the time and opportunity to involve all the necessary people in all the regions. Reports from the Regions indicate that, in the coming months, efforts along this line will be receiving the highest priority.

Let me be frank to tell you, though that we have been quite disappointed and concerned by the action of the House of Representatives on the appropriation for this program. As you know, the budget was cut by \$10 million. At the same time, the House Committee indicated in its Report: "the committee is thoroughly convinced of the great importance of these programs to the health and welfare of every American. The concept of Regional Medical Programs must be made to work, and no effort should be spared to ensure that it does."

However, this budget cut will make it much more difficult to make the program work. As I have discussed before, full implementation of the program requires participation and commitment by many types of individuals and agencies.

This will not be possible if there is continued uncertainty about the continuation and support of the program.

The appropriation level for this program for the first two years and the President's budget request for the third year has been less than half of the amount authorized by Public Law 89-239. And the amount in the law was less than the amount recommended by the President's Commission on Heart Disease, Cancer and Stroke. And now the budget may be cut further.

Let us give this program a chance to show what it can do. We should not hurt its development and upset the confidence that is growing in its soundness and effectiveness.

During the last year, many people have told me what hope and confidence they have in this program. For example, Dr. Sidney Farber told the National Advisory Council a few months ago, "I want to say how grateful I am that I had the opportunity to watch the development of something that I think will make more history in medicine than anything else the NIH has done." Dr. Tinsely Harrison of the University of Alabama Medical Center has said that "It is my opinion that the fate of the regional Medical Programs will ultimately be one of the factors, or perhaps the most important one, that will determine whether we shall be able to retain in the United States our present system of private medical practice."

The first four operational programs in this program have recently been approved by the Council and awarded by the Surgeon General. This program, which I understand Dr. Marston has discussed in detail with you, indicates the types of operating programs and patient benefits that can flow from this undertaking. We anticipate that many more of such programs will be submitted in the next few months.

It would be very unfortunate if this program and progress were unnecessarily delayed. Therefore, I hope you will give every possible consideration to funding this program at an adequate level, at least at the level of the President's budget request. The most effective expression of the Congress' confidence in the progress and potential of this program is an adequate appropriation.

You will recall, Senator Hill, that it was on February 9 and 10, 1965, that your Committee on Labor and Public Welfare held the first hearings on S. 596, the bill that later became Public Law 89-239.

During the two years since then, many unpredictable and encouraging events have occurred to bring Regional Medical Programs to their present developing status. Your conviction at that time of the importance of this effort is being proven to be realistic and well-founded. This program offers a unique means of bringing to all the people the benefits of the great research programs that have been undertaken in recent years with the great aid of your Committee.

I and my associates of the National Advisory Council on Regional Medical Programs share the pride you must feel in having launched the legislation that started this great nationwide program. We are confident that, with adequate and continuing support, Regional Medical Programs will not only realize but will surpass the expectations of those who were part of its beginning.

STATEMENT OF DR. ALEXANDER GUTMAN, DIRECTOR, DEPARTMENT OF MEDICINE, MOUNT SINAI HOSPITAL, AND PROFESSOR OF MEDICINE, COLLEGE OF PHYSICIANS AND SURGEONS, COLUMBIA UNIVERSITY

NATIONAL INSTITUTE OF ARTHRITIS AND METABOLIC DISEASES

PREPARED STATEMENT

Senator HILL. Dr. Gutman.

Dr. GUTMAN. I very much appreciate this opportunity to come before you again, Mr. Chairman, and members of the committee.

Senator HILL. We are glad to have you back, sir.

We would be happy to have you proceed in your own way, sir.

Dr. GUTMAN. I have a prepared statement. May I submit it?

Senator HILL. All right. We will have that appear fully in the record.

(The statement follows:)

I appear before you today to speak on behalf of the activities of the National Institute of Arthritis and Metabolic Diseases. My name is Alexander B. Gutman and I obtained my Ph.D. degree at Cornell University and my medical degree at the University of Vienna. At the present time I am Director of the Department of Medicine at the Mount Sinai Hospital, New York City, and Professor of Medicine at the College of Physicians and Surgeons, Columbia University. Since 1946 I have been Editor-in-Chief of The American Journal of Medicine, a journal which I founded. I am a Member of the Board of Governors of the Arthritis Foundation, New York Chapter. As Consultant to the United States Public Health Service, I have served on the Metabolism and Nutrition Study Section of the National Institutes of Health, and on the Arthritis and Metabolic Diseases Program-Project Committee, the Board of Scientific Counselors, and the National Advisory Council, all of the National Institute of Arthritis and Metabolic Diseases. I am a former President of the New York Rheumatism Association, past President of the Harvey Society, former Consultant to the National Research Council, and former Member of the New York City Health Research Council. I am also a member of various medical societies, including the Association of American Physicians, American Society of Clinical Investigation, American College of Physicians, the New York Academy of Medicine, and the American Medical Association. During World War II, I was a Laboratory Consultant to the Office of the Air Surgeon. I am a former associate editor of Cecil and Loeb's Textbook of Medicine. I am a recipient of the Francis Armory Prize of the American Academy of Arts and Sciences, the Gairdner Foundation Annual Award, and the Holbrook Memorial Award of the Arthritis Foundation.

It is both a privilege and a pleasure to appear before you once again. This Committee's farsighted approach to the health needs of our Nation is well known by the unswerving support which you and your colleagues in the Congress have given to the programs of the National Institutes of Health. As a result, this outstanding biomedical research facility, together with its extensive extramural programs, has played an important role in the unparalleled progress of medicine in recent years. You may be assured that American medicine has recognized the valuable service performed directly and indirectly by this institution.

When we speak of the National Institute of Arthritis and Metabolic Diseases we are referring to an organization that is now comprised of many diverse disciplines and fields, ranging from the original areas of arthritis and the rheumatic diseases, diabetes and other metabolic disorders, nutrition and fundamental biomedical research, into important other fields including gastroenterology, endocrinology, kidney disease and urology, dermatology, surgery, and diseases of the blood and bone. The Institute has also engaged in extensive fundamental biomedical research involving disciplines such as biochemistry, enzymology, pharmacology, pathology, molecular biology, toxicology, genetics, and chemical biology.

Today, I would like to begin by citing briefly some specific advances made by the National Institute of Arthritis and Metabolic Diseases in the battle against that formidable group of chronic cripples, the arthritic and rheumatic diseases. For many years my immediate concern with this long-neglected field of medicine has made me all too acutely aware of the frustrations shared by physician and patient alike when confronted by these disorders.

Many of the major health problems of our Nation have been posed by the various forms of arthritic and rheumatic diseases. Few of us have been untouched at one time or another by the havoc which such chronic disorders have wrought on members of our families or those of our associates. The toll of physical suffering exacted by these disorders is weighted even more heavily as a result of the mental anguish and financial strain imposed on the victims, their families and, in many instances, their communities. In varying degrees, these burdens of prolonged illness and attendant loss of income have been reflected in the total economy of the country. As this Committee has foreseen, even a burgeoning economy could not tolerate such oppressive loads indefinitely, especially when the increasing proportion of aged persons in our population is compounding the issue.

Until recent years, the research and medical practice concerned with arthritic and rheumatic disorders had been considered a discouraging field of medicine. As a result of the inability to gain insight into the basic causes of these disorders, the physician had been forced to rely for the most part on palliative forms of treatment. His patient, on the other hand, desperate for relief from slow and crippling torture, had become an easy prey for the "quick cure" and quack profiteers in human suffering. Understandably, the feelings of helplessness and hopelessness experienced in long-term illnesses had been shared often by patients and physicians alike.

Happily for our Nation's health, a far more encouraging outlook on many of these chronic diseases is emerging with many remarkable advances in the biomedical sciences. Increased activity and interest in probing the secrets of normal and pathologic life processes has led to a gratifying outpouring of new information. From my close-range observations as physician and educator in health-related fields, I have witnessed valuable gains in the understanding of arthritic and metabolic diseases. Moreover, I have been impressed by the predictions, implicit in present successes, of even more significant discoveries in the future.

Thanks to the support of this Committee, the National Institute of Arthritis and Metabolic Diseases has exerted a stimulating influence on the field of arthritis and metabolic diseases. With its well-conceived and ably-executed programs of research and training, this Institute has welded a unique alliance of public and private biomedical efforts into effective assault forces against some of man's most crippling foes. Indeed, the meritorious way in which this mission has been discharged has fully justified, in my opinion, the confidence which you have placed in the programs of this Institute.

It seems fitting here to bring into closer focus just a few of the direct and indirect recent achievements of this Institute. Time does not permit a more intensive exposure of accomplishments of the last year, and I am sure that many of these have been conveyed to the Committee in the testimony of the Director of the Institute.

In the study of rheumatoid arthritis, the most crippling of the arthritic disorders, research interest has recently centered upon two possible causes—viruses belonging to the *Bedsonia* family, and mycoplasmas, microorganisms with characteristics somewhere between bacteria and viruses. Both have recently been linked to joint diseases in animals, and their possible role in the causation of human rheumatic diseases is currently undergoing intensive investigation.

Last year I reported to the Committee that the isolation of mycoplasma from rheumatoid arthritis patients had suggested a possible causal relationship to this crippling disorder. While definite proof of such an association has not been established thus far, further investigations are continuing. To my mind, continued and coordinated approaches involving many aspects of mycoplasma research seem essential to the utmost exploitation of this exciting lead.

This past year, other investigators have produced arthritis in monkeys by injecting them with *Bedsonia* organisms isolated from human patients with Reiter's syndrome, a disease closely related to rheumatoid arthritis. If further studies confirm initial findings, this work may eventually have important bearing on a whole series of disorders that have arthritic manifestations, including rheumatoid arthritis.

In my own specific area of research interest, gout, scientists in recent years have reduced to a minimum the clinical manifestations of this metabolic disorder, and patients with this disease can be maintained with reasonable comfort and need not fear the hitherto disabling and crippling effects of this disease. Before this Committee several years ago I testified concerning preliminary investigations of a promising new anti-gout drug, allopurinol, which had been found capable of markedly suppressing uric acid formation in gouty patients.

Intensive and thoroughgoing studies of allopurinol now have justified our optimism regarding this drug in that it has proved to be both effective and safe for long-term usage. Results of these studies have lent emphasis to the statement that gout now can be the best controlled of all the arthritic disorders.

Current treatment of gout is geared toward controlling excess accumulation of harmful uric acid in the body, and at preventing or relieving recurrent painful attacks of gouty arthritis. Largely under the aegis of this Institute, potent drugs have recently been developed which can suppress abnormal uric acid production, or stimulate its excretion via the urine, and thus, prevent a buildup of harmful crystal deposits in the joints and elsewhere.

Future research in gout will emphasize methods of detecting this hereditary metabolic disorder in its earliest stages in order to permit prompt treatment. It is well established that early recognition and early treatment of gout with modern therapeutic weapons can prevent joint damage and kidney complications.

Corresponding developments have been made in all of the areas in which this Institute has an interest—metabolic diseases, gastroenterology, endocrinology, kidney disease, and many others. I think it would be fitting if I were to touch briefly upon several accomplishments in these areas.

As you know, diabetes is a complex disorder for which there is no known cure, and which ranks high on the list of diseases that cause death. This disorder affects individuals predisposed to it by their hereditary background. It has been generally accepted that abnormal carbohydrate metabolism, as evidenced by elevated blood sugar levels and abnormal glucose tolerance tests, is the initial sign of clinical diabetes, and that small blood vessel disease develops as the disease progresses. Grantee-scientists at the University of Texas Southwestern Medical School in Dallas, however, have unearthed evidence to suggest that the reverse might be true; specifically, diabetes may be a disease primarily affecting the vascular system and not simply a disorder of glucose metabolism.

Their findings suggest that thickening of the basement membrane of small blood vessels may represent the primary lesion of diabetes, followed only secondarily by carbohydrate derangements. The significance of this observation is that diabetes investigators are now afforded a new angle of attack, a direction for research efforts which may be much more fruitful in determining the fundamental cause of diabetes than previous studies directed mainly toward the abnormality in carbohydrate metabolism.

It has also been proposed that the basic cause of diabetes may be the production of a structurally abnormal insulin. This concept has gained support from an Institute-supported investigator who has shown that insulin isolated from the blood of diabetic children is significantly more resistant to destruction by an insulin-specific enzyme than is insulin derived from normal individuals. His findings suggest that there might be a genetically determined structural difference in juvenile diabetic insulin which contributes importantly to the underlying biochemical disorders of diabetes.

Other Institute-supported investigators have described a metabolic disorder closely resembling human *juvenile* diabetes which has appeared as a new genetic mutation in inbred mice. The diabetic animals exhibit a severe disease syndrome with onset at an early age and a shortened life-span. Because the disease closely resembles juvenile diabetes in man and is readily reproducible, the new strain of mice will provide a hitherto unavailable and much needed experimental animal model for further research of this most severe and disabling form of diabetes.

Institute scientists, continuing their studies of the Pima Indians of Arizona—a population group recently found to have the highest diabetes rate ever reported in a circumscribed normal population—have found that the effects of child bearing do not account for the higher prevalence of diabetes among women. In fact, contrary to expectations, the prevalence of diabetes, especially in the younger age groups, was found to be somewhat higher in Pima women who have not borne children than in those who have borne seven or more.

Institute scientists and grantees also have made significant contributions in the past year in research in other disease categories for which it is responsible, such as cystic fibrosis. Cystic fibrosis is an inherited metabolic disease which affects the exocrine, or externally secreting, glands of the body. Virtually all manifestations of this disease are due to obstruction of these glands, such as those in the lungs and the pancreas, by viscid mucus secretions. An afflicted child usually suffers from malnutrition and chronic lung disease and fails to grow and develop unless the correct diagnosis is made and treatment promptly initiated. The chronic lung involvement is usually the cause of a downhill course resulting in death, in most cases before adult years are reached.

In the past year, a new, reliable diagnostic aid was devised by Institute-supported scientists involving the analysis of samples of toenails, fingernails and hair for elevated concentrations of sodium and potassium. This new test also has proven useful in identifying adults who are carriers of the cystic fibrosis trait.

A very exciting and important discovery was made in the past year by investigators at Duke University. For the first time a marker has been found in the blood of cystic fibrosis children and of parents who already have children

with the disease. Cystic fibrosis, it has long been known, is the result of a particular set of faulty genes in both parents. Until now, however, there was no way available of deciding accurately whether the fault was present in a potential parent or not. In their study, these investigators found that when suitably concentrated blood fractions of parents of cystic fibrosis children—those *known* to carry the genes—are placed on tissues taken from the tracheae of rabbits, the minute eye-lash-like cilia, which cover the exterior of these cells, beat erratically and irregularly. Normally, the cilia beat with a uniform wave-like sweeping motion. Irregularity of beating (or sweeping) occurred also when blood samples of CF children were used. The test will be most useful in letting couples know if their children are likely to inherit cystic fibrosis.

Institute interest in research on kidney disease includes the various specific kidney disease entities, kidney transplantation studies, improved understanding of chronic uremia—the end-stage of kidney disease—and development of better artificial kidneys. Progress, for example, in the latter category was apparent this past year when a group of Institute-supported investigators developed a smaller and more efficient artificial kidney which costs half as much as a conventionally used dialyzer (blood cleansing device), can be assembled in 10 minutes and sterilized in an autoclave. It has considerably decreased the present high blood priming requirements and thus the need for compensatory blood transfusions. This new artificial kidney can cleanse a patient's blood in 8 to 10 hours, compared to the 12 to 14 hours needed with a standard unit, enabling an increase in the bed capacity of artificial kidney treatment centers. Although a series of these new artificial kidneys is being produced for extensive testing, the new machine is by no means a final solution to the problem, but is a good step forward toward greater efficiency and reduced cost in the management of chronic kidney disease by artificial kidneys.

The Institute's relatively new Artificial Kidney Program already has initiated a number of research and development contracts aimed at reducing the cost and improving existing dialysis methods and equipment. These projects involve, for example, the most significant bottleneck in current dialysis—the development of improved blood cannulas. Among other aims of this program are the development of new concepts in artificial kidney design such as diafiltration, or a man-made imitation of the function of the natural kidney, hollow fiber kidneys, evaluation and development of a special diet which could delay for substantial periods the need for intensive dialysis, or for use in maintenance of uremic patients for whom chronic dialysis is deemed not feasible or unobtainable, and many other projects related to improved and less expensive dialysis methodology or apparatus. At the same time, the Institute, through related grant-supported studies, is studying the biochemical and physiological characteristics of chronic kidney failure, complete knowledge of which is needed for a rational design of more efficient artificial kidneys, and for better rehabilitation of patients maintained through dialysis.

During this past year, scientists supported by the Institute have made significant contributions toward identifying and characterizing the toxic factors in uremia. Identification of these factors in the blood of uremic patients is essential to a better understanding of uremia and to improving hemodialysis apparatus and techniques. Treatment of uremic patients with an artificial kidney usually results in clinical improvement, suggesting that the small molecules removed by dialysis contribute to the symptoms of uremia. Although other investigators have shown that metabolic processes are impaired by factors present in the serum of uremic patients, for the most part they have been unable to characterize such factors chemically.

Recent studies have suggested that catabolism of aromatic amino acids may lead to accumulation in the blood of intermediate products which may play a role in development of the toxicity of uremia. Institute grantees have shown that blood levels of aromatic amines (degradation products of aromatic amino acids) are markedly elevated in uremic patients, that these high levels are correlated with blood urea nitrogen levels, and that they are reduced significantly by hemodialysis with an artificial kidney, resulting in improvement of the patients' clinical status. These findings suggest that aromatic amines play a role in the toxicity of uremia.

Proceeding to another important area of Institute concern, investigations in the field of endocrinology have yielded many needed clues about the internal glandular secretions of the body and the glands which discharge these secretions. The pituitary gland at the base of the brain, for example, secretes a number

of potent hormones which regulate body activities, and the same gland is also the source of human growth hormone. This hormone, which functions primarily to regulate body growth processes, has also been used successfully in the treatment of hypopituitary dwarfism. The demand, however, far exceeds the supply of the hormone, which is obtainable only from human pituitary glands at autopsy.

The chemical structure of this vital hormone was determined during the past year by a grantee-scientist at the University of California, who, ten years earlier, had first described the isolation and partial characterization of the same hormone. His most recent finding marks a major advance toward understanding the several modes of action of human growth hormone and increases the chance for its eventual synthesis in the laboratory. It is anticipated that "core" fragments of the molecule may be characterized which retain specific biological effects, such as growth-promotion, mammary gland stimulation, and a fat-releasing effect. These fragments may be synthesized initially and, ultimately, the large, complex molecule itself may be made.

Generally it is difficult for the casual observer to place the importance of such fundamental research discoveries in proper perspective. Such findings, however, are basic supporting structures of the biomedical achievements of the future. As biomedical research becomes more sophisticated, it focuses on smaller and smaller units of living systems. For example, present basic studies of the molecules essential for fundamental life processes reveal how these ultramicroscopic cell components are constructed and how they organize themselves with other molecules into living systems. These studies already show how even the slightest disorganization, or missing component, in a molecule may result in an abnormality in the human system which may also be transmitted to offspring of future generations.

Research at the most basic level is conducted to obtain new information about the very fabric of life—the myriad, physiologic facets of living tissues—and to determine their interactions and reactions in health and disease. Just as any structure should rest on a firmly-constructed foundation, if it is to endure, so, too, clinical medicine can make significant progress only from the solid foundation built on new and logically-acquired knowledge of the fundamental elements of life. To acquire this basic information, Institute research is conducted in the disciplines of genetics, molecular biology, biophysics, entomology, biochemistry, medicinal chemistry, and a host of other fundamental areas.

In the last analysis, however, what counts from the patient's point of view is not the knowledge possessed by research scientists, but the information possessed, in a clinically useful form, by the practicing physician. To this end, the Institute has made increased efforts during the past year to communicate, at the earliest possible moment, information concerning discoveries of Institute grantees and Institute scientists to the practicing community. My colleague, Dr. Traeger, has testified to the effectiveness of the Institute's scientific communications program, and I shall not dwell upon this subject.

At this time, I would prefer to discuss briefly a subject to which I have not alluded during my entire testimony, the scientist. It is axiomatic that the development of a vigorous national research program in the health sciences requires that every effort be made to attract and provide stable support for the best scientific minds and the ablest investigators.

Present promises held out by the advances I have described can only be thwarted unless forceful support is forthcoming to increase the limited supply of scientific talent needed in research, medical practice and education in health-related fields. Inevitably, unless the means are found to attract a larger number of highly intelligent and highly motivated young people into careers in the health sciences, we run the risk of losing the opportunity to translate present progress in these sciences into better health benefits for each citizen.

One of the most fruitful programs of this Institute has been its support of the research training of young biomedical scientists in fields of concern to the Institute. As an educator in this area, I can attest to the acute need which has existed for the development of indispensable human resources in a proper training environment. The shortage of manpower in health related fields has been so critical that it has become difficult to forecast what is an adequate pool of highly trained scientific manpower to assure the future conduct of meaningful research.

It has been said that the art of investigation is the cornerstone of all the experimental sciences. Yet this art requires the highest degree of trained dis-

cipline which can be acquired only after years of scholarship and training. All too many promising candidates for this field have been unable to afford the luxury of this time-consuming preparation during the most important years in their development. As a result, their talents, vitally needed in the health research field, have been frequently siphoned off into pools which are more financially rewarding.

Fortunately, the attrition in this direction has been alleviated by the programs of training grants and fellowships administered by this Institute. These grants have been awarded to some of the most promising young candidates, in the biomedical fields of concern to the Institute, at medical schools, universities and other research centers throughout the country. The benefits which have and will be accruing to our national health as a result of this research training support cannot be measured in terms of dollars and cents. To be sure, although the outcome of this great effort against disease and disability will be acclaimed primarily in terms of human betterment, I daresay that in the long run the beneficial economic effects will outweigh by far our present-day investment.

In the allocation of funds for biomedical research, prudent consideration should surely be given to this serious factor if the health needs of our people are to be met properly now, as well as in the future.

Mr. Chairman and Members of this Committee. I am familiar with the Administration's proposed budget for this Institute and I am familiar with the needs of the programs carried out or supported by the National Institute of Arthritis and Metabolic Diseases. This familiarity is a result of my own three years as a member of the National Advisory Council of this Institute. And this familiarity breeds deep anxiety, for I have helplessly observed, year after year, the availability of insufficient funds to support research grant applications whose scientific merit and importance had been approved after a vigorous dual review by study section and Council. With each passing year, there is a smaller proportion of these approved extramural grants actually being funded, and as of this date, roughly only about fifty percent of these already approved grants are being supported. The priority cutoff due to lack of funds is high, indeed, too high to permit a reasonable funding of approved and meritorious research projects. The situation is particularly alarming since this Institute, because of its wide range of disease responsibilities, takes care of the greatest number of extramural research projects among the National Institutes of Health.

Although the Institute has received, during the last few years, increases for the funding of extramural research projects, these increases are largely or completely offset by the yearly increase in the cost of doing research.

Fiscal year 1968 budget proposed by Citizens for the National Institute of Arthritis and Metabolic Diseases

[In thousands]

	1968 President's budget	1968 Citizens' proposal
Extramural grants:		
Research grants.....	\$96,304	\$105,000
Fellowships.....	6,591	7,500
Training.....	15,706	17,500
Total extramural.....	118,601	130,000
Direct operations:		
Laboratory and clinical research.....	14,333	15,000
Collaborative studies.....	7,736	8,500
Biometry, epidemiology, and field studies.....	751	850
Review and approval of grants.....	2,157	2,500
Program direction.....	376	550
Total direct operations.....	25,353	27,400
Total.....	143,954	157,400

So in reality these increases in dollar amounts do not result in any actual increase in research projects or research output, but merely serve to counteract the deleterious influence of this yearly increase in the cost of undertaking

biomedical research—much of which is due to the general increase in salaries and overhead, as well as the higher cost of better and more sophisticated and complicated equipment for doing today's research.

This Institute is facing a serious dilemma in the extramural funding of research grants. This ever-mounting financial impasse must be resolved if accelerated progress is to be made in the fight against disease. I am hereby suggesting to you a budget which, I believe, presents a reasonable picture of needs and which I wish to commend to the earnest consideration of this Committee.

WITNESS TRAINING AND PROFESSIONAL INTERESTS

Dr. GUTMAN. My name is Alexander Gutman, and my background of training and interest includes teaching research and medical care, teaching as a professor of medicine at the Columbia University College of Physicians and Surgeons for many years, and currently chairman of the Department of Medicine of the Mount Sinai School of Medicine.

In research, my efforts have been mostly in metabolic diseases, in the past 20 years or so particularly in gout and the particular type of arthritis that characterizes gout, and my experience with patient care derives largely from my position as head of the Department of Medicine at the Mount Sinai Hospital.

With this background, I have become very much interested, for many years, in the activities of the NIH, and particularly in the activities of the National Institute of Arthritis and Metabolic Diseases.

NATIONAL INSTITUTE OF ARTHRITIS AND METABOLIC DISEASES DIVERSITY OF RESPONSIBILITIES

I always feel a little awkward to plea a special case, namely, the National Institute of Arthritis and Metabolic Diseases, because I know that all the Institutes have been doing a magnificent job, and they all have much the same kind of a problem, due to stringency of funds, and the fact that they would like to accomplish more than they are doing now, but available funds do not permit this.

But I think there are two circumstances, if I may say so, that give special weight to the needs of the NIAMD.

The first of these is the unique diversity of responsibilities of this Institute. Unlike some, its interests are not confined to a very specialized area, but they are spread over a broad field.

Originally, as you will recall, the Institute's interest lay chiefly in arthritis and other rheumatic diseases and in a few metabolic disorders, such as diabetes.

In recent years, at the behest of Congress, the responsibilities of the Institute have expanded and now are very inclusive indeed. In addition to the diseases I mentioned, we are interested in gastroenterology, hematology, endocrinology, urology, diseases of the kidney, of the blood and of the bone, and in very recent years also dermatology.

This covers quite an expanse of interest and requirements, and of course these are just practical applications of work in specialized areas.

BIOMEDICAL RESEARCH

Underneath this, lies something else like an iceberg, where only about a 10th of the volume appears at the surface; the bulk of work is not visible to the casual lay inspection, but is extremely important. I am referring, of course, to the fundamental research in biomedical subjects, which the Institute supports, and this amounts to a variety of disciplines, such as genetics, or molecular biology; all of this is encompassed within the activities of the National Institute of Arthritis and Metabolic Diseases and of course in other institutes as well.

UTILIZATION OF FUNDS

Well, this diversity of responsibilities attracts certain earmarked funds for which the Institute must provide, and I would like to say something more about some of the problems that arise from earmarking the funds, if I may, a bit later, and has attracted the largest number of research grant applications currently made to any of the institutes, and consequently increasing funds.

This Institute does not grant the largest amount of extramural money, but it does take care of the largest number of grant applications, and to fit the needs to the supply of funds requires the utmost exertions of the administration of the Institute, and I want to tell you that as a member of its National Advisory Council I have the greatest admiration for the dedication and ingenuity and hard work that goes into making the most of the funds available. Extraordinary efforts go into this, and the dedication, of course, of the study sections and of the Council.

Now if I may have a few moments to cover some of the high spots——
Senator HILL. Go right ahead, sir.

SCIENTIFIC ADVANCEMENTS

Dr. GUTMAN (continuing). The developments, because they are really very exciting.

We are living in an extraordinary age of scientific development and achievements have already been covered in previous testimony before you. But I would like to mention a few.

GOUT

Dr. Traeger will speak on arthritis with considerable enthusiasm, I am sure. I shall confine my remarks in this field to that special form of arthritis which we call gout.

There has been considerable achievement in this, in the control of this form of arthritis, so much so that an article, I believe it is in the current issue of the Readers' Digest, has appeared recently entitled, "An End At Last to Gout?" They put a question mark at the end of it, but this fact expresses the achievements and improved controls so that the gouty patients need no longer suffer the effects of crippling arthritis and the effects of gout.

Almost all the advances in this area have been accomplished by grantees of this Institute. Some of the work was done intramurally within the Institute, and some extramurally, and I might say that the two groups work together very congenially and productively.

NEW DRUG ALLOPURINOL

I mentioned last year, I believe, the important new drug that has been introduced in the control of gout, namely allopurinol. This continues to be very effective and relatively nontoxic, and is a contribution originating through research activities and developments at Duke University.

I want to make one comment about this because it illustrates something that happens in scientific endeavor all the time, namely, allopurinol was not introduced for the treatment of gout; this was a by-product. The initial interest in allopurinol was in the control of neoplastic diseases or cancer, in which it has some usefulness, but as so often happens in science, you advance by indirection.

You have a theory which proves to be partly successful, if successful at all, but the alert investigator finds byproducts which turn out, ultimately, to have much more value than the original concept.

That is what happened here, originally designed for the control of neoplastic diseases, it turns out that the most important use thus far discovered for this drug is in the control of gout and in the control of uric acid stone formation.

This type of thing runs through all of the Institutes and is particularly pronounced in the institute that has to deal with metabolic diseases.

IDENTIFICATION OF ENZYME NEGATING GENETIC DEFECT OF SYNDROME
CHARACTERIZED BY SPASTIC CONDITION OF EXTREMITIES

I should mention also in this connection a really brilliant contribution that came from a group of workers, intramural workers, within the National Institute of Arthritis and Metabolic Diseases, Dr. Seegmiller, and his associates.

I just cannot say enough for the ingenuity and the brilliance of this development. They discovered that a curious syndrome which had been known particularly to pediatricians for some years characterized by very spastic condition of the extremities by purposeless movements of the hands and feet, athetosis, by feeble-minded, and by a most bizarre self-mutilation.

These children have a compulsion to chew on their lips and tongues, fingers, toes, when they can get at them, and mutilate themselves. This seems to be a compulsion that they are unable to control.

Recently it has been discovered by two workers in Miami, that this curious disease is characterized by very high levels of uric acid in the serum, and Dr. Seegmiller and his associates have worked out in the most beautiful way the nature of the genetic defect which is characterized by the absence of a particular enzyme important in metabolism. They have identified this missing enzyme, and we hope this will be the first step to the long road to the control of this extraordinary syndrome, which is not confined to these children, but occurs also in adults, and may be responsible for a form of gout.

This is the type of activity that the Institute has been supporting, and I mention these particular achievements again to emphasize the point that you cannot predict the direction that research will take. Very often, the important things were not in the original plan of attack, but develop later when you have bright young people working on a variety of problems.

DIABETES

I would like to comment also in the extraordinary progress being made on the understanding of diabetes. In the past year, grantees of this Institute have worked out a new experimental model for the disease. They have discovered or developed an inbred strain of mice which suffer from a form of diabetes not hitherto available; namely, the most severe form of the disease, the most difficult to control, juvenile diabetes, and we hope now with this experimental model to make progress in understanding and control of this disorder which is so disturbing to so many youngsters all through the country.

Moreover, another very interesting and we think important discovery is that the insulin which is formed and circulates in diabetic children, in sufferers from juvenile diabetes, has an abnormal structure, different from the normal insulin, and it shouldn't take very long before the precise structure of this polypeptide insulin can be discovered, and this, too, may lead to further improvements in control of the disease.

The whole concept of the basic nature of diabetes is changing. Amongst the other things, grantees of the Institute have discovered the fact that the earliest phases of diabetes are not those that control the sugar metabolism, but others that lead to peculiar changes in the membranes of small arteries in the body, that are widespread in many organs of the body.

So the whole point of view, the whole concept of the underlying disorder in diabetes now is changing, and this will surely have an impact on its management. We hope for early recognition of the basis of this disorder, which is vital to the control of the disease and to the development of new methods of treatment.

HORMONE STRUCTURAL ANALYSIS AND SYNTHESIS

I mentioned last time, Senator, what I think will ultimately prove to be one of the most important successes of grantees of this Institute; namely, the continuing activity on structural analysis and synthesis of various hormones. Many of these turn out to be polypeptides; that is, small size proteins. The structure of virtually all of them has been well defined now. The most recent success is that of Dr. Li at the University of California who has isolated and determined the precise structure of human growth hormone.

This is important from a practical point of view, because human growth hormone has a number of applications in the management of various human diseases, but the source being limited to the human pituitary gland, its supply is very limited, despite a special activity to produce and distribute the hormone which is done by the National Pituitary Agency of the National Institute of Arthritis and Metabolic Diseases. If the hormone could be produced synthetically, and this is well within the range of possibilities, and not in the too distant future because of improved methods of synthesis of proteins and polypeptides, we would look forward to the availability of such hormones and modified agents which should be useful in the management of various diseases.

HEMODIALYSIS CONTROL OF RENAL DISEASES

The work on hemodialysis control of renal diseases is progressing rapidly.

If we had more funds, more patients could be taken care of. As you realize, this is a very expensive program, but I would like to express my admiration for the way the Institute has gone about the problem of developing this field, by improved techniques, and amongst other things in the past year through the development of a new artificial kidney, the so-called BG dialyzer, named after the inventors, which is smaller, more efficient, and requires less blood for priming and altogether seems to be an important advance in making this process available to larger segment of the affected population.

CYSTIC FIBROSIS

Before concluding, I should also mention the important work that is being done in cystic fibrosis, which, as you will hear, is certainly a major public health problem affecting so many of our children.

A new test for the early recognition of the disease, not only in children but in their parents, and also important work in the structure of the muco proteins, which appear to be abnormal in structure in this disease, and contribute to some of the symptoms of the disease.

HOUSE EARMARKING OF FUNDS

As you know, sir, the House has provided \$2 million, which it directed the Institute to use for cystic fibrosis research.

Senator HILL. Yes.

Dr. GUTMAN. As a citizen witness, I welcome this recognition for the study of a most important public problem, but our joy is somewhat qualified by the realization that an additional appropriation for this amount was not made, and that therefore a considerable amount of money, we estimate of the order of three-quarters of a million dollars, will have to be extracted from more general use to be applied to cystic fibrosis.

I can only express the hope and the urgency of this hope, evidently in a moment, that if it is the wish of Congress to encourage research in cystic fibrosis, and I trust it will be, that such additional funds be allocated and that this will not be done at the expense of work in other fields which are just as urgent.

As I indicated, in order to get advances in any applied project it is necessary to do an enormous amount of fundamental, basic work in order to make such applied work practical.

If I may now turn to the budget—

Senator HILL. While you are speaking of the budget, the House did not put in an additional \$2 million. They just said that of the funds appropriated they should use the \$2 million for cystic fibrosis. Is that correct?

GRANT APPLICATIONS AND FUNDING REQUISITE

Dr. GUTMAN. That is correct.

We estimate that a million or a million and a quarter could be profitably applied to research grant applications that are now at hand,

and to develop useful grant applications for the remainder would, at the present moment, be most difficult. Moreover, unless these funds are supplemented to the existing budget it would mean that we would have to take these moneys out of other funds.

Now we are in a very, very desperate situation in relation to funds. I mentioned that this Institute has the largest number of applications of any of the Institutes and the number is not declining.

Last year, we could have used \$7.5 million to support applications that were approved by study sections and council.

Senator HILL. You had no funds for them?

Dr. GUTMAN. They could not be funded. I don't have to tell you the impact this has on our young investigators, and our older investigators, who prepared themselves to do research, have demonstrated they can do research, are dependent on these funds not only for their research activities, but in many instances for their very livelihood, and submit applications which are approved by their peers after a vigorous review but cannot be funded.

So we are, so to speak, about \$7.5 million in the hole as of this moment, and I believe that this record of liability is about as bad as that of any of the Institutes, and more than most.

CITIZEN BUDGET PROPOSED

It is for this reason that the citizen proposal, with full awareness of the stringency of the funds and the needs of many other organizations in the country, the citizen proposal requests \$105 million for extramural research grants, which represents an increase above the increase in cost of research, which is barely covered by this year's increment for this purpose in the administration's budget, and a small increase in support of fellowships, and an amount of \$17,500,000 for support of training.

We just haven't enough funds to train all the young men who would like to get additional training; how are we going to man the regional centers that Dr. Traeger has spoken of in his preceding testimony this morning?

How are we going to supply the faculties of the new medical schools that are being built, meet the demands of the country's increasing population to train the young men for biomedical research who, by the way, make substantial financial sacrifices to do this work?

We just need more funds to do this and, therefore, the request for a modest but definite increase in support of training.

The intramural operations also require more funds due to the increase in cost of research, and these are indicated in the budget which I am submitting with my statement.

Senator HILL. What is your total amount requested, Doctor?

Dr. GUTMAN. For the extramural program, the total amount is \$130 million. The 1967 appropriation was \$112 million. For direct operations, \$27,400,000. Last year the appropriation was \$21,916,000.

The total, then, requested, or suggested, recommended, is \$157,400,000, as compared with the 1967 appropriation of \$134 million—\$134,132,000.

Senator HILL. Is there anything else you would like to add?

Dr. GUTMAN. No, I think that summarizes the situation, and I wish to thank you for hearing us.

STATEMENT OF DR. TRAEGER

INSTITUTE DIVERSITY OF RESPONSIBILITIES

Senator HILL. Dr. Traeger?

Dr. TRAEGER. Well, that doesn't leave me much to say, Mr. Chairman. Dr. Gutman has covered the waterfront, for which I am very grateful.

I am not going to trouble you with details of progress in the Institute. It is good.

Senator HILL. You sat on that Council for some time, did you not?

Dr. TRAEGER. Yes, sir. As a matter of fact, I came off that Council to go on the Heart, Cancer, and Stroke Council.

Senator HILL. That's right.

Dr. TRAEGER. As Dr. Gutman has pointed out, it is a very peculiar Institute, and even though I have to ask indulgence, I want to repeat the structure of this organization.

Senator HILL. Go right ahead, sir.

Dr. TRAEGER. First of all, it started out with arthritis, that was originally the main function, and then came the metabolic diseases, like diabetes and cystic fibrosis, and then the gastrointestinal diseases, gall bladder, liver, ulcers, and then the enormous variety of endocrine diseases, blood diseases, nutritional problems, urology, kidney diseases, artificial kidneys, uremia, dermatology, and all this represents hundreds of diseases and thousands upon thousands of patients. This is really a tremendous field.

If you remember, Mr. Chairman, I was—I came down here in 1951 to testify for the development and sat by at the origination of that Institute.

Senator HILL. I remember.

RESEARCH

Dr. TRAEGER. It is a successful Institute. It is so successful it is successing itself into the poorhouse, because of its good work and small budget.

Now I am dealing here with an entirely different set of facts. In my previous presentation this morning, I was talking about regional medical programs. I am talking now about research.

Senator HILL. Yes.

Dr. TRAEGER. Now as I have said so many times, like it says in the Book of Genesis: Research begets research, and this begetting problem goes on and on. Every new idea becomes useful in its application to the patient, but more so it becomes useful in giving you a window out of which to look and give you a new direction for further research.

ANNUAL COST INCREASES AND PROGRESS

This is a snowballing business, and you cannot attempt to carry on a research program without understanding that every year it is going to cost more, because there is more to do, more has been found out, there are more places to go, more directions to follow.

It is silly, really, for me to come down here year after year after year and talk about giving us more money. You ought to know that right now.

Senator HILL. May I interrupt you a minute. I remember the year I graduated from the University of Alabama, the commencement speaker used this illustration:

Let what you know be represented by the circle. What you do not know is outside. The more you know, the larger this circle becomes, and the more points of contact it has with the outside, so the more you know the more you realize is outside that you do not know.

Is that right?

Dr. TRAEGER. That is absolutely right, Mr. Chairman. This concept is absolutely true, but you have to have carfare to get out there, and this carfare gets higher and higher every year.

Senator HILL. Sure.

NEVER-ENDING UNDERTAKING

Dr. TRAEGER. Now where do you stop with research? You don't stop. You can't stop. You go from the known to the unknown.

Senator HILL. One path leads to another.

Dr. TRAEGER. That is right, sir.

Suppose the Polio Foundation, after spending millions of dollars in 30-odd years said, "This is the end, it is hopeless, let's give up"?

Where would we be today? Until John Enders found you could grow viruses on monkey kidney extracts, this whole thing was in limbo.

Surely we knew polio was a virus disease, but could not do anything until there came a breakthrough.

The same is true of insulin and its role in diabetes. A couple of kids at a lab bench in Canada worked out the whole development of insulin.

I go back to the days before we had insulin and these diabetic people had to live by a scale, and they didn't live good, and they didn't live long.

The same is true of pernicious anemia for which a remedy was found by a couple of little kids in Boston. When I was an intern, we had prizes on how to cook liver in ways that people would eat it 4 days in a row.

You start out looking for a cancer drug, and you wind up with a uric acid control mechanism, which is probably the best we have had so far. This is research.

Research is getting more and more complicated. Today in research, whether it is research in medicine or research in industry, you have to deal with the tiniest little things.

I was taught, and so were you when you went to college, that an atom was a small, indivisible particle of matter. It ain't necessarily so. The atom is a whole universe.

And it took many years and expensive instrumentation to find out about the atom, and now we are worrying about DNA and RNA and how they are going to affect the human race.

We have the problems of pharmacology and other fundamental disciplines and they are all in this Institute. This Institute has many mandates, many jobs it has been given to do.

TRAINING

Then as Dr. Gutman pointed out, this problem of manpower. Of course, manpower is a real problem, but it is always a problem, and it is going to continue to be a problem, and we have got to do what has to be done to solve it.

Sure, we have 25 new medical schools coming up and that's your fault. I sat on that Senate commission—that Senate Committee for Research, worked every second weekend for 2 years, and what was our end result? We found that we need more manpower, and as a result of your committee's work, we are getting 25 new medical schools.

But as fast as they are made, the product is absorbed into the various medical areas. If every doctor's productivity could be increased by 4 percent, it would take the place of 11,000 doctors, and this is what we are trying to do in this Institute, make doctors more effective.

INADEQUATE FUNDING OF RESEARCH GRANTS

Well, we don't have enough money for all of this—as Dr. Gutman said, we turned down these youngsters, and oldsters. We turned down their research projects—we don't turn them down. We approve the projects, but we cannot fund them for lack of money in the Institute. The end result is the same.

Senator HILL. You haven't got the money to pay them?

Dr. TRAEGER. We can't afford to do that at the moment. There may be a Dr. Murphy, there may be a John Enders, or a Jonas Salk, to whom we are saying right now, "Sorry, buddy, we don't have any money."

We cannot afford to do that. You know, the whole business of living is a gamble. You never know, as you go back over the history of science, you never know where the breakthrough is going to come, and to me it is almost suicidal to see these projects—and I am not talking about low-priority projects, I am talking about good-priority projects, that come up year after year, in council meeting after council meeting, that have to be turned down.

You not only lose the project, but we lose the interest of the man who came down and asked for its funding, and when this happens once or twice or three times, as I said before, he goes to work for Colgate-Palmolive, and makes perfume and shaving soap, and he makes more money, and he has less to worry about.

Senator HILL. He doesn't have to work over the weekend.

Dr. TRAEGER. That's right. You and I know, Mr. Chairman, doctors working down here in the Public Health Service, in the National Institute of Health, who have gone into industry and have come back, come back from jobs that paid them up to \$75,000 in a year—to research jobs that are paying them \$15,000 a year, because they want to do it.

But as I say, it is getting almost futile for me to come down here year after year to ask for money to do the job you have asked us to do, to carry out the mandate that you said we have to do.

Who made the National Institutes of Health? The Congress. In its infinite wisdom, and they ought to be proud of it, but you can't run these Institutes and do any kind of a job by shaving budgets—fish or cut bait. You either run them right, or quit.

Senator HILL. If you run them you have got to have that money?

Dr. TRAEGER. That is right, Mr. Chairman, and there is no use piddling around with it. We go around here with a sense of frustration year after year after year, rendering honest-to-God lipservice instead of adequate financial support. There has to be an end to this somewhere.

Do not think, Mr. Chairman, that I do not know your problem. Everybody in the scientific community is banging your head for more money, but what are we going to do?

We cannot run these Institutes, not only the National Institute of Arthritis and Metabolic Diseases, but any Institute, without adequate financing. You know, there is no pork barrel in this. What we are talking is fair, rockbottom, down to the last dollar.

INSTITUTE DISTRIBUTION OF INFORMATION

Now this Institute, as I say, is successing itself into the poorhouse, but it is doing more than that. We always talk about delivery of new information, getting it from the laboratory bench to the practicing doctor:

This Institute is really doing a magnificent job. Many times, as we have studied research projects, they have been turned down because the applicant had not had sufficient knowledge of the scientific literature, he is a little naive.

Well, how much time does one man have to go over the literature? The literature is enormous. So this Institute has developed these four publications which, to my mind, are absolutely fantastic.

The first is the "Arthritis and Rheumatic Diseases Abstracts." This comes out every month, and there is in it an abstract of every single new important research article in arthritis in medical journals from all over the world. Now this is something that saves countless man-hours of going to the library, it also prevents reduplication of research, and it also makes available to the practicing physician the latest in research and development.

The same is true of gastroenterology, of the vast area of intestinal diseases, and of diabetes—tremendous—here the Institute publishes "Gastroenterology Abstracts and Citations" and "Diabetes Literature Index." You know the progress in diabetes is going so fast so that you have to run even to stand still, and this helps.

Then the new publication of the Institutes, "Kidney Failure and Artificial Kidney Bibliography," which is now a real center of attraction.

Therefore, you have got to think about this Institute as a big omnibus with an enormous mandate, tremendous scientific horizons to cover, with problems of manpower to develop, having to carry on its training programs, its job of communications to the doctors, and the adequate financing of its research programs.

I do not need to go into the details of the budget. Dr. Gutman has already done that, but this is a must, this Institute needs help, and at this point, Mr. Chairman.

ARTHRITIS

I would like to speak just for a minute on the condition of the arthritis problem.

ABSENCE OF KNOWLEDGE

You know I have been interested in this disease for 35 or 40 years. We don't know what causes it, and we have no cure for it. We have been talking about it for a long time. A couple of years ago we set up a conference at Airlie House to discuss the problem.

Senator HILL. Yes.

RESEARCHES DISSIMILARITY IN APPROACHES

Dr. TRAEGER. We have done a good deal of research, but the difficulty is—and I hate to confess it, but this is true—we don't speak the same language, we don't have the same criteria, we don't give value to the same things, we argue amongst ourselves whether this goal is better than that.

We know nothing about the natural history of the disease. Our statistics are not hard—they are as soft as all get out.

And we are really going to have to get together and start to talk about the same things.

Now, it was set up that the only way that this can be done reasonably, intelligently, and with a minimum of expenditure is to pick out regions in the United States, nine regions, according to the nine divisions of the Public Health Service.

They are already in existence, but they have been doing the same thing for years and years, and set up an integrated program so that they talk the same language, that they develop the same criteria, is that statistics which come out of that kind of a study are hard, factual ones, and not interpolated ones, that the types of therapy will be adequately tried and adequately evaluated.

DEFORMITY ENIGMA

You know, nobody knows whether splinting can prevent deformity in arthritis. We talk about it glibly, but you cannot prove it. Now, this is a dreary disease. You can't give a man an injection today and expect that 10 days from now he is going to be alright. This is a disease that needs constant observation, if you want to know what you are talking about to prevent deformity, you have got to splint these people and wait 5 years to see whether or not it works.

DIRECTIONAL UNANIMITY REQUISITE

Now this has got to be done, Mr. Chairman. We have got to get some sense of direction. We have got to get a universal language; we have got to have universal criteria for the evaluation of treatment, we have got to have proper statistics of not only diagnosis but of treatment, and effective treatment. It is too bad, we don't have a definitive test that will determine rheumatoid arthritis, or osteoarthritis.

PROPOSED PLAN

Now, many of us have put our heads together and have developed a plan whereby nine centers, which are already extant—you don't have to build them up—can be made to work together and made to work along the same lines, where at the end of 7 years we will know what we are talking about, and we will be talking about the same thing.

FUNDING

The details are available with the National Center for Chronic Disease Control. The budget for these nine centers would come to about \$47 million. Now, that's not much, when you consider that the Department of Social Security, Welfare Administration, and the Veterans' Administration spend \$393 million a year for arthritic disabilities; \$47 million is peanuts, and I strongly urge that this problem be taken under consideration and be made to work. Otherwise, we are going around in circles. We have got to get a sense of direction, and we have got to talk about the same things, and it can be done, and it can be done easily.

Mr. Chairman, it is always a pleasure to come before you.

Senator HILL. It is very fine to have you here, sir.

Dr. TRAEGER. And I hope you will listen to us with an open heart.

Senator HILL. Not only an open heart, but an open mind, a sympathetic heart and mind.

You have both brought us some fine, challenging, and informative testimony. We are deeply grateful to you. You have certainly done a beautiful job here this morning.

PREPARED STATEMENT

We shall put your prepared statement in the record.

Thank you very, very much. Thank you.

(The statement follows:)

Mr. Chairman and members of the committee, it is with great pleasure that I appear before you today to speak once more on behalf of the activities of the National Institute of Arthritis and Metabolic Diseases. My name is Cornelius Traeger and I am a Doctor of Medicine, having obtained my medical degree at the Columbia University College of Physicians and Surgeons. I am a practicing physician and member of the faculty of Cornell University Medical College. I am Chief of the Arthritis Clinic and Consulting Attending Physician at the Hospital for Special Surgery of the Cornell Medical Center and at Roosevelt Hospital. I am a member of the Board of Governors of the Arthritis and Rheumatism Foundation, Past President of the New York Rheumatism Association, Past Vice President of the American Rheumatism Association, and Past Medical Director of the National Multiple Sclerosis Society. I have been associated in the past with the programs of the U.S. Public Health Service and the National Institutes of Health as a Special Consultant to the Surgeon General and as a member of the National Advisory Councils of the National Institute of Neurological Diseases and Blindness and the National Institute of Arthritis and Metabolic Diseases. I also was a member of the Senate Committee of Consultants on Medical Research.

My pleasure at being permitted to testify again before you Gentlemen knows no bounds. Having appeared before this illustrious Committee in the past, I feel at home, so to speak, among old friends, as well as allies against that old and elusive adversary, disease. Your record in support of the campaign against human disease is unsurpassed and can hardly find a parallel in medical history. Your efforts to bolster the significant research and training programs of the National Institute of Arthritis and Metabolic Diseases epitomize the humanitarian aspect of our National Government and its concern for our people; indeed, for people the world over.

Although our country is today in a better position to do more than ever before to advance the national well-being, the health problems facing us today also are broader in scope and complexity. These health problems can only be met through continued teamwork, including the sagacious support this Committee has provided over the years to the prudently conducted programs of this Institute. The objectivity with which this Institute has executed its mission has had a deeply profound influence on the fields of biomedical research within its purview.

For many years, as a practicing physician and medical educator, and through my association with this Institute, I have been privileged to witness the highly stimulating effect of its programs concerned with research and training for research. It is my considered opinion that the Institute conducts a most efficient and effective operation, both intramurally and extramurally. The fact that such support has been made available to the "bench" scientist attempting to increase our knowledge of the cause and nature of the diseases for which this Institute is responsible, as well as for improved instruction programs providing better training for our physicians and research investigators and scientists, has made these programs particularly significant.

The most promising weapon available for attack upon disease is a continually expanding biomedical research program that will progressively determine the causes of major diseases and produce improved methods of treatment, and ultimately lead the way to the prevention or cure of all diseases. Considerable progress has been made in dealing with diseases heretofore thought to be incurable or untreatable. In large measure this can be attributed directly to the remarkable increase in the total national medical research effort in the last decade or so. And the National Institute of Arthritis and Metabolic Diseases has exerted a potent influence in this endeavor.

With its comprehensive and superbly-conducted programs of research and research training, this Institute has continued to execute its mission in a manner compatible with the generous support provided by this Committee. As a rheumatologist, whose specialty lies in a field of primary importance to this Institute, I am especially impressed by the vitality which Institute programs have injected into the area of arthritic and rheumatic disorders. This category of chronic diseases, which includes some of the most disabling afflictions known to man, is one with which I have been intimately concerned, both as a physician and a medical educator. In my professional capacities I have been afforded an unusual opportunity to observe the stimulating effect of Institute contributions to what was once a virtually stagnant disease area, blighted by a dearth of knowledge about these disease processes and a comparable dearth of practitioners interested in specializing in this seemingly hopeless field. Institute concern for learning more about these disorders and for attracting the needed talent in this area has been, to a large extent, the stimulating factor which has led to a more improved outlook on present understanding and treatment of the various arthritides.

This dynamic influence could not be illustrated more effectively than by citing some of the results of Institute activities in research and support of research in its specific spheres of biomedicine in the past year. These activities encompass a broad field ranging from research pertaining to arthritis, metabolic disorders, such as diabetes and cystic fibrosis, gastrointestinal diseases, including diseases of the liver and gallbladder, endocrine disorders, diseases of the bone and blood, kidney diseases, nutrition, urology, dermatology, and orthopedics to studies in the basic disciplines relevant to these disease areas.

These laboratory and clinical studies are enhanced further by Institute work of a fundamental nature. Research at the most basic level is carried out to obtain new information about the fabric of life—the myriad, physiologic facets of living tissues—and to determine their reactions and interactions in health and disease. Clinical medicine can make continued significant progress only from the solid foundation built on new and logically-acquired knowledge of the fundamental elements of life. In order to acquire this basic information, Institute research and support of research is conducted in the disciplines of molecular biology, genetics, biophysics, biochemistry, enzymology, medicinal chemistry, pharmacology, histology, pathology, toxicology, anatomy, and many others.

The field of rheumatology offers many examples of advances and new knowledge gained. While it is true that we have not yet been able to pinpoint the specific cause of this insidious disorder and do not possess as yet a cure for it, we have made advances, bit by bit, in essential knowledge. As a result of my close association with arthritis and related diseases, I can attest to the serious encroachments which these "half-life" disorders have on its victims. I have also seen how these inroads on human health are being checked increasingly through continued research efforts, particularly those conducted and supported by this Institute.

At this time, Mr. Chairman, I would like to review a few highlights of this Institute's activities of the past year. For example, in their search for a causative agent in rheumatoid arthritis, the most crippling and disabling of the arthri-

tides, investigators are now encouraged by recent evidence suggesting that a mycoplasma may be involved, directly or indirectly, in the etiology of this disease. Mycoplasmas are a type of microorganism somewhere between bacteria and viruses in size and other properties. Although the evidence linking mycoplasma infection to rheumatoid arthritis is still fragmentary, it is sufficient nonetheless to warrant further research. Other factors thought to be associated in some way with the onset of rheumatoid arthritis are heredity and emotional stress. Investigators supported by the Institute obtained evidence this past year in a study of rheumatoid arthritis in twins that its onset is determined by factors occurring in the course of psychological stress.

Another grant-supported study has helped to explain the anti-inflammatory and fever-reducing effects of aspirin, a drug used more extensively than corticosteroids in treating rheumatoid arthritis and related disorders. This study and its findings concern lysosomes—subcellular packets of enzymes found in large numbers in synovial lining cells of rheumatoid joints. Previously it had been shown that disruption of these lysosomes induces an arthritic lesion in rabbits similar to human rheumatoid arthritis. Aspirin has been found now to stabilize lysosomes, indicating that its beneficial effects may be brought about by a lysosomal mechanism.

A study by other Institute-supported scientists offers hope for an effective form of rheumatoid arthritis therapy and possibly for other diseases caused by faulty immune mechanisms (autoimmunity). These investigators produced adjuvant arthritis—an experimentally induced form of arthritis which exhibits a true but transitory, immunological reaction and polyarthritis symptoms—in 30 rats by injecting them with Freund's adjuvant. The investigators treated 10 of the rats with rabbit anti-lymphocyte serum, which suppressed the usual arthritic reaction; only one rat developed a moderate arthritis. By way of contrast, 20 control rats all developed marked polyarthritis. This significant research lead is being pursued to determine its possible applicability to treating arthritis in humans.

One of the principal theories on the pathogenesis of rheumatoid arthritis is the autoimmunity concept, a theory that holds that the body, for unknown reasons, produces abnormal antibodies that are directed against its own tissues rather than foreign material. Part of the evidence in support of this concept is the elevated gamma globulin (antibody) content of the blood of rheumatoid arthritis patients and the antibody-like nature of the characteristic rheumatoid factor—complex, specific proteins found in the serum of these patients. One factor against the antigen-antibody concept in the past has been the frequent occurrence of arthritis in patients with a disorder known as agammaglobulinemia, which is associated with a deficiency of antibodies. Rheumatoid factor cannot be found in the blood of these patients and immune gamma globulins can be found only in minuscule amounts. Institute-supported investigators have now refuted this argument by showing that in agammaglobulinemia, immunoglobulins not detectable in the blood may be found in the joint. Their findings indicate that in this disease immunoglobulins apparently are produced in demonstrable quantity in the synovial membrane, just as in typical rheumatoid arthritis. This demonstration of an immunoglobulin reaction in agammaglobulinemic arthritis gives additional support to the concept of autoimmunity in rheumatoid arthritis.

This past year has also seen several significant findings by Institute grantees concerning osteoarthritis, a common disease of unknown cause in which degenerative changes alter the mechanical structure of joints. These scientists have found that a certain cartilage-bone marrow extract is of clinical value in treating osteoarthritis. Cartilage of patients with this disease is believed to be deficient in chondroitin sulfate, a component of the ground substance of tissues. Theoretically, a preparation capable of stimulating the synthesis of chondroitin sulfate in the affected tissues would be considered helpful in counteracting pathological changes seen in osteoarthritis. This material, the investigators reported, stimulated the uptake of radioactive sulphur in human osteoarthritic cartilage, indicating increased synthesis of chondroitin sulfate. This exciting study warrants further investigations into the basic mechanism of action of this extract, as well as continued clinical trials of its effectiveness.

Systemic lupus erythematosus, or SLE, is a grave, generalized disease which is manifested by structural and functional changes in the skin, joints, and internal organs. Young women are most frequently affected, and the disease is found most often in the 20-40 year age group. For many years, research on this insidious inflammatory connective tissue disorder was hindered by lack of an experimental

animal model. Then, in 1961, a strain of highly inbred New Zealand mice was discovered which developed a disease resembling human SLE without evidence of any concurrent infection or dietary deficiency. Further studies of these animals by grantee investigators at a number of institutions have now provided additional clinical and pathological data which emphasize the close similarity between this model and the human illness.

Further investigation of this heretofore unavailable animal disease model should provide clues to its cause and development, should lead to controlled studies of various methods of treatment, and may provide keys to a better understanding of the human disorder.

Although the cause of SLE is not known, evidence points to an abnormal antibody reaction. Circulating antibodies that are capable of harming the body's own tissues have been found in SLE patients. It has been suggested also that these antibodies may combine with the products of tissue breakdown to form immune complexes potentially harmful to other organs such as the kidney. Institute-supported investigators have now found further evidence to support this theory. They have detected antinuclear antibodies in the skin lesions of SLE patients, and have proposed that such lesions may contribute to the formation of immune complexes capable of damaging other organs.

Unfortunately, time will not permit me to cite research achievements of the past year in other areas of Institute responsibility, such as in the fields of gastroenterology, endocrinology, and hematology. The preceding accomplishments, however, vividly depict the broad scope of Institute research results.

At this time, Mr. Chairman, I would like to touch on another, equally important, aspect of research for better health, and that is of manpower for such research. Manpower is certainly the scarcest and surely the most vital of the components presently needed. A simple continuation or even uncritical extension of current training activities of this Institute at present rates is inadequate to deal with the complex and changing circumstances of the future. The basic problem with which these activities deal is the insufficient number of independent researchers and teachers having the degree of scientific sophistication and competence required for truly effective biomedical research and research training of others.

This problem is applicable to the so-called traditional, well established areas of research, such as arthritis, diabetes and endocrinology, and to an even greater degree to such emerging and resurgent fields as orthopedics, dermatology, gastroenterology and urology. The Institute is an important focal point at the National Institutes of Health for support of training in the clinical departments of medical centers and medical schools in view of its responsibilities for the greatest number and variety of diseases. This Institute's overall training program is facing a demand situation of unprecedented proportions. It is expected, for instance, that about 25 new medical schools are being or will be established within the next several years. Additionally, already established medical schools are creating new departments in response to the current general broadening in the field of medicine and to meet the need for improved teaching and research. Finally, some of the existing schools which in the past produced only medical practitioners are now changing this emphasis toward producing in addition, more fulltime educator-investigators.

Although Institute training programs have been eminently successful in increasing the actual number of trained investigators in various specialties and disciplines, this added manpower is being fully absorbed as it is created and in reality is inadequate to meet the current expanding requirements. Compounding the problem is the unusual length of time necessary to develop and train the qualified research investigator, especially in the field of clinical investigation. In an attempt to alleviate this problem, the Institute has established a limited number of special training programs in this field at several medical centers where innovations are underway to explore new approaches to training. If experience proves fruitful, more such programs should be established so as to produce qualified clinical investigators earlier, particularly in their most productive and imaginative years.

Taken together, the various training activities of the National Institute of Arthritis and Metabolic Diseases are designed to achieve their goals through a system of training grants and research fellowships so integrated as to promote a balanced array of training opportunities for individuals in the various stages of career development. A sufficiently large and highly trained pool of skilled and imaginative scientific manpower is the most critical dimension of the problem facing us in the fields of arthritis, diabetes, endocrinology, gastroenterology,

hematology, kidney disease, and other areas for which this Institute is responsible. In order to attract high-quality candidates into these fields, it is essential to provide good initial research training opportunities, as well as the advanced programs whereby selected investigators may further develop and sharpen their investigative and clinical skills.

At present, this Institute is seriously underfinanced and has had to restrict its extramural research and training support gravely—particularly during the last two years, when literally hundreds of promising and approved research applications could not be supported for lack of funds. I am earnestly convinced that their lack of funds creates a potentially serious and tragic situation that will prevent this Institute from executing in thorough fashion the important functions with which it has been charged. As previously stated, future advances in medicine depend not only on sustaining and reinforcing outstanding current research, but also on the development of a highly trained and skillful force of capable and dedicated young scientists for the future and on the ability to fund their approved research proposals.

In calculating the costs of these programs, we must consider that they represent the pressing needs of a rapidly expending population, not merely the promotion of medical research and training for their own sake. In as much as these programs are dedicated and designed to promote the health and well-being of our citizens, their cost is indeed reasonable for the priceless commodity we seek. The enormous burden of human suffering due to disease and disability, and the financial outlay for the support and institutionalization of those disabled by chronic disease, literally saps the financial strength of our country. The only way in which we can hope to ease this great financial burden in the future is through continued progress in medical research and through practical applications of research findings.

The transmission of these findings to other research scientists and to the private practitioner is yet another important concern of the Institute. This Institute has shown itself to be acutely aware of the need for improved communications between research scientists, and between scientists and medical practitioners, to facilitate research progress and to hasten the application of research findings at the patients bedside. Toward this end, the Institute embarked several years ago on a major program, including the initiation of a series of unique scientific current-awareness publications, which also contain references to or translations of important research findings of foreign investigators. Another aspect of this program is the encouragement and support of personal communication among scientists through working conferences in areas within its purview.

In recent years, impressive strides have been made by the Institute to cope with this communications problem with the publication of various current-awareness guides and abstracts. Last year, for example, the Institute began publication of a quarterly current-awareness publication entitled *Artificial Kidney Bibliography*, which deals with research and development in the area of kidney failure, dialysis, artificial kidney improvement, and kidney transplantation. Other such current-awareness publications initiated in the past by the Institute include the well received *Arthritis and Rheumatic Diseases Abstracts*, the *Diabetes Literature Index*, and the *Gastroenterology Abstracts and Citations*. These new scientific communications techniques brought about with Institute support provide alerting services which heretofore never existed to help keep investigators and practitioners informed of developments in their particular fields.

In summary, Mr. Chairman, we have witnessed over the last several decades the development in this country of the most intensive, effective and highly cooperative research campaign against disease. What makes this effort unusual is the responsible partnership between the Federal Government, the health and scientific professions, medical schools and universities, medical centers, and private, voluntary health organizations interested in health advances. The role of the National Institute of Arthritis and Metabolic Diseases and the judicious support which you in the Congress have given it, have been a most significant and decisively important factor in this effort.

I am familiar with the Administration's proposed budget for this Institute as well as the needs of its programs. I feel strongly that the Administration budget, although providing for a small expansion, should be extended to include better support for the essential activities of the Institute.

In conclusion I wish to thank you, Mr. Chairman and Members of the Committee, for permitting me to present these facts about the programs of the Institute which bear directly upon the successful execution of its mission.

CYSTIC FIBROSIS AND OTHER CHRONIC PULMONARY DISEASES

STATEMENT OF DR. MILTON GRAUB, PRESIDENT, NATIONAL
CYSTIC FIBROSIS RESEARCH FOUNDATION, NEW YORK CITY

RESEARCH TRAINING

Senator HILL. One of the first things a doctor has to learn is patience, isn't it?

The good book tells us the Lord loveth the patient and the longer service.

We are glad to have you here, and will be glad to have you proceed in your own way, sir.

Dr. GRAUB. Thank you very much.

Mr. Chairman and gentlemen, I am Dr. Graub, pediatrician for 18 years, associate professor of pediatrics at Hahnemann Medical College, Philadelphia, Pa.; and now president of the National Cystic Fibrosis Research Foundation.

I would like to present to you today the urgent need for more basic and clinical research and training in cystic fibrosis and other chronic pulmonary diseases. Basic research and training in the framework of the National Institute of Arthritis and Metabolic Diseases, and clinical research and training in the chronic respiratory control program of the Bureau of Disease Prevention and Environmental Control.

DISEASE VICTIMS, CHARACTERISTICS AND MORTALITY

As you know, cystic fibrosis is a disease of children although it is seen with increasing frequency among adolescents and adults. It is a disease of the glands which affects the lungs and the digestive system. It invariably leads to malnutrition and chronic lung disease and, far too often, to death. It causes more deaths in children than poliomyelitis, diabetes, and rheumatic fever combined.

Senator HILL. Then all of those diseases put together?

Dr. GRAUB. Yes, sir.

Mortality and morbidity have been reduced in recent years, but the outlook for most patients with advanced cases of the disease is still bad. To improve the prospects for children with the disease we need to develop more simple and more effective means of therapy.

BASIC RESEARCH IMPERATIVE AND POTENTIAL

The only way we can do this is by broadening the base of research. I am sure you gentlemen would be willing to provide the funds for this research and for the training that would also be needed if you were convinced there were sufficient leads to refer to offer the likelihood of worthwhile results.

I can assure you that there are such leads, and I can go further than that and tell you that they are new leads of great promise that were not in our hands 6 months ago.

INTRAVENOUS ADMINISTRATION OF GUANETHIDINE

Investigators in Pennsylvania have evidence today that the pathological process within a cystic fibrosis gland may become reversible.

A drug, Guanethidine, administered intravenously to cystic fibrosis children has temporarily restored abnormal salivary gland secretions to normal. This is the first time to our knowledge that a drug has altered the abnormal processes of a cystic fibrosis gland this way.

This drug is a valuable tool in the manipulation of secretions of a diseased gland and will allow basic studies of the nature of the altered glandular disturbance. This gives us great hope that cystic fibrosis may be modified by chemical means, even before the basic biochemical abnormality is understood.

INDICATIONS OF DISEASE BLOOD FACTOR

A second exciting and promising finding from Duke University indicates that there may be a good—a blood factor associated with cystic fibrosis. A biological assay has been developed which has permitted the Duke workers to identify a unique property in the serum protein fraction of cystic fibrosis patients.

An article by Nate Haseltine in the Washington Post of May 19—is appended—which I shall not take the time to read, describes the Duke development exceedingly well.

Senator HILL. A good article, wasn't it?

Dr. GRAUB. Yes. It is a very good article.

ANIMAL DISEASE SYSTEM DEVELOPMENT

Until the past 6 months the ability to do research has been severely limited because the poor afflicted child has been the only research model. There was no known animal model for cystic fibrosis. Now work by investigators in Wisconsin raises the hope that we can develop an animal system that could revolutionize research in cystic fibrosis.

They have shown that cystic fibrosis saliva and sweat contain a substance that causes a dramatic change in the salivary gland of the rat.

When cystic fibrosis sweat or saliva is injected into the salivary gland of the rat, the gland loses its ability to handle salt normally. This property appears unique to cystic fibrosis sweat and saliva since normal sweat or saliva have no measurable effect on salt in this animal test system. The potential for the system is enormous. Enzymes, hormones, drugs, and various agents can be tested for their ability to modify the salt loss effect. This might be our first screening system for more and new agents to treat cystic fibrosis.

RESEARCH INTEREST SURGE

There is a great surge of interest in research in cystic fibrosis since these developments have come to light in the course of the past 6 months. In fact, there are many more requests for research support from the National Cystic Fibrosis Research Foundation than we can meet.

We cannot afford to lose the ideas of these researchers nor their interest, nor the use of their talent. So, we turn to you to provide the means in the structure of the Public Health Service to meet the financial needs which otherwise won't be met.

HOUSE EARMARKING OF FUNDS

When my colleagues testified in the House of Representatives in April, they recommended an increase of \$700,000 in basic research in cystic fibrosis and \$250,000 in training. The House responded by saying in its report—

The committee therefore directs that \$2 million of the appropriations for the National Institute of Arthritis and Metabolic Diseases be devoted to research on cystic fibrosis.

It apparently added \$700,000 to the \$1.3 million the NIAMD said it had budgeted for fiscal year 1968, and came up with the \$2 million total. We trust that this Senate committee will provide the additional money to sustain the House action as far as basic research is concerned and will also provide the \$250,000 in training funds which are so badly needed.

Senator HILL. The \$250,000 will be in addition to the \$2 million?

Dr. GRAUB. Yes, sir.

Up to this point, I have been speaking about the urgent needs for basic research and training. Basic research and training are fundamentally vital, yet only part of the total problem.

CLINICAL RESEARCH AND TRAINING

Clinical research and training are equally important. Without clinical research the gap between basic discovery and clinical application is unbridged. Our years of experience with cystic fibrosis and related lung diseases suggest that clinical research can be best accomplished in a center environment.

PROPOSED PEDIATRIC PULMONARY DISEASE CENTER PROGRAM

We, therefore, recommend that a program for pediatric pulmonary disease centers be established in the chronic respiratory control program of the PHS Bureau of Disease Prevention and Environmental Control.

HOUSE NONFUNDING OF PROGRAM

We presented this part of the comprehensive program to the House in April. But the House committee, while it showed great interest and its members were encouraging in the questions it asked about the centers, was not able to fund the program because of the budgetary climate in which it was operating.

PROGRAM COST

Senator HILL. How much would you need for this now?

Dr. GRAUB. \$750,000 for five centers.

The recommendation is made because of the large number of children with crippling and often fatal pulmonary diseases who are not properly treated.

Candidly speaking, gentlemen, the average physician does not have the specialized training nor does he have the elaborate equipment or multidisciplinary biomedical team necessary to properly diagnose and treat chronic pulmonary disease.

The program for pediatric pulmonary centers would be a good start toward solving this serious deficiency. Chronic pulmonary disorders in young and middle adult life very often begin in childhood.

Severe lung disease in childhood robs the child of his ability to breathe. Only by multidisciplinary treatment can these irreversible pulmonary changes be prevented. Multidisciplinary treatment requires development of the multidisciplinary pulmonary centers. The development of these centers would provide the proper setting for technical and professional training and provide exemplary service and care.

PROGRAM DISEASES

The program would include bronchitis, asthma, bronchiectasis, cystic fibrosis and other respiratory diseases of children with the exception of tuberculosis. It would embrace coordinated programs of teaching, clinical research, and training.

CENTER METHOD MOST PRACTICAL AND ECONOMICAL

The pediatric pulmonary centers would be the most practical and economical method of increasing the availability and improving the quality of care.

A child with severe neonatal chronic respiratory disease should be referred to a pediatric pulmonary center for diagnosis and a comprehensive treatment program tailored to his individual needs. He should be worked up and treated as an outpatient but hospital facilities must be available for those who need intensive treatment to bring the disease under control.

In the outpatient clinic or the hospital, the patient and parents should be instructed in the treatment procedures in home therapy. When the child is sent home he should be followed up by the family physician and at frequent intervals by the center. This would require close liaison between the center and the family doctor and would develop a salutary exchange of information. General problems could then be handled locally and the child again referred to the center whenever its specially trained personnel and facilities were necessary.

This arrangement would produce large amounts of data on the incidence of respiratory diseases and the effects of therapy on disability and mortality. Such data could be channeled to the National Center for Chronic Diseases for collection, comprehensive evaluation, and dissemination to the health profession at large.

In general, these pediatric pulmonary centers should be established in existing medical centers where the special interest and competence of personnel and the availability of facilities and equipment indicate potential for the development of effective and comprehensive teaching, research, and care programs.

FUNDS REQUEST

PEDIATRIC PULMONARY CENTERS

It is therefore our earnest recommendation that \$750,00 be added to the appropriation for the National Center for Chronic Diseases in fiscal year 1968 to provide first-year grants of approximately \$150,000 for five pediatric pulmonary centers. The estimated annual operating

budget for such centers after they achieve full staff and patient load will be about \$250,000 per year. During the initial development years, grants of about \$150,000 will be required since it will take time to attract qualified trainees and a full patient load.

These funds would be made available on a competitive basis. A suitable merit review system for awarding grants or contracts would be established by the National Chronic Disease Center.

The need for this program is great if we are to reduce our infant mortality rate which is outrageously high. Chronic pulmonary disease which results in inability to breath normally is one of the most tragic forms of disease. It is even more tragic because much of it could be prevented if the benefits of modern treatment were provided to the children who need them.

INSTITUTE OF ARTHRITIS AND METABOLIC DISEASES

We ask you gentlemen to reaffirm the amount of money provided by the House in the Institute of Arthritis and Metabolic Diseases and we also ask you to provide the pediatric pulmonary centers which we are confident the House will accept if you offer the opportunity.

Thank you very much.

Senator HILL. I understand you would like to have at least \$3 million.

Dr. GRAUB. \$2,750,000, plus the \$250,000 for the training.

Senator HILL. Making a total of \$3 million?

Dr. GRAUB. Yes.

Senator HILL. We want to thank you for your statement.

Off the record.

(Discussion off the record.)

Senator HILL. Dr. Clark? We are glad to have you here with us this morning, Doctor.

STATEMENT OF WILLIAM S. CLARK, M.D., PRESIDENT, THE ARTHRITIS FOUNDATION, NEW YORK CITY

ARTHRITIS

Dr. CLARK. Thank you, sir.

Mr. Chairman, I am Dr. William S. Clark, a physician who also specializes in arthritis. For 25 years I have been deeply involved in the problems of research, teaching, and patient care in the general area of the rheumatic diseases. Since 1964, Mr. Chairman, I have been president and full-time chief executive officer of the Arthritis Foundation and represent the board of directors and medical council of that organization in this testimony before your committee today. We as an organization have not before presented testimony. We are so doing at this time.

As you know, there is no other major disease problem in the United States in which there is such a gap between what needs to be done and what is being done.

The national effort against arthritis is regrettably small, and problems in the control of arthritis is still being delayed by public ignorance and apathy.

INVESTMENT IN RESEARCH

Today we are investing \$15 million in research directly related to arthritis, which is a little more than a dollar a victim a year, and in spite of what we hear, we can spend more money intelligently and fruitfully.

Never before has research offered so much promise for the control of arthritis. You have heard Dr. Gutman's testimony on advances in research in gout. New clues are unraveling the mysteries of chronic inflammation of the joints, and there is new hope for control of rheumatism inflammation by drugs, or chemotherapy.

We endorse the programs of the National Institute of Arthritis and Metabolic Diseases. Much of the progress that has been made toward solving the problem of crippling arthritis can be credited to that Institute. The programs of research and research training in arthritis administered by the National Institutes of Health must continue and must expand. Nevertheless, arthritis supported by that Institute has become now a very small part of the total effort of the NIAMD.

Over the years, other disease problems have been added, as indicated by Dr. Traeger.

AIRLIE CONFERENCE REPORT

Dr. Traeger also referred to the report in August 1966, of a comprehensive study of the arthritis problems sponsored by the Surgeon General. This was the so-called Airlie Conference. That report represented a consensus of the Nation's leading rheumatologists and emphasized the critical need for more facilities for early diagnosis, intensive treatment, and continuing ambulatory care; more medical and allied professional personnel trained to provide comprehensive care for arthritis patients; more studies focused on the natural history of the rheumatic diseases and the effectiveness of treatment; greater public awareness of the importance of crippling arthritis and the benefits to be derived from early diagnosis and comprehensive care.

CLINICAL RESEARCH CENTERS

There is an urgent and critical need for support by the Federal Government of arthritis clinical research centers which can meet the immediate demands and also find answers to two key questions, namely: How can present medical knowledge be most effectively delivered to individual patients, so as to prevent or control disability from arthritis; and how can we determine the natural history of these diseases in order to hasten the discovery of curative or preventive measures?

Such information cannot be obtained by simply supporting facilities for short-term research in hospitals.

Clinical research centers are now financed by the Arthritis Foundation and have provided ample demonstration of validity of this approach. Unfortunately, our own funds are woefully inadequate for today's needs.

We have learned that it is not the policy of the National Institute of Arthritis and Metabolic Diseases to provide comprehensive support for research carried out in this manner.

OBJECTIVES OF CENTERS

Time does not permit a full description of how such centers function. In brief, they are organized to achieve the following objectives:

1. To demonstrate that early diagnosis and early initiation of comprehensive care will prevent crippling and disability from arthritis;
2. To conduct long term clinical and epidemiologic studies in order to define the natural history of the arthritic diseases and to evaluate the effectiveness of treatment and rehabilitation;
3. Provide excellent postgraduate and continuing education in arthritis for practicing physicians and allied health personnel;
4. To put to use locally the knowledge and competency acquired at the centers by the practicing physicians and allied health personnel; and
5. To provide a focal point for community programs of coordinated services and continuing care for people with arthritis.

RECOMMENDED APPROPRIATION

We recommend that the Congress appropriate \$1.5 million to the National Center for Chronic Disease Control of the Public Health Service to establish a network of arthritis centers and satellite centers, or clinics. This can get the regional centers referred to by Dr. Traeger off the ground. The figure of \$47 million referred to by Dr. Traeger would represent a fully developed national program.

The stated mission and previous activities of the National Center for Chronic Disease Control are consistent with the aims of this program, since their primary responsibilities are for applied research, technological development, operational development and demonstration, training, and the operation of programs for prevention and early detection of chronic diseases.

We have had many discussions with representatives of that Center. This concept of centers for the care and study of patients with arthritis has been developing in a few medical schools and teaching hospitals during the past 25 years. Their experience promises that crippling and disability from arthritis can indeed be forestalled.

A recent analysis done at the National Center for Chronic Disease Control has shown, for example, that the application of our present knowledge about arthritis can, through the prevention of disability, return \$40 to the economy for every dollar invested.

SUPPORT OF KEY PERSONNEL AND FACILITIES

The funds for the support of key personnel and facilities for ambulatory care which have come largely from private philanthropy, principally voluntary health agencies, can now be expanded profitably by the Federal Government. Private funds have only been sufficient to stimulate the development of this concept and to demonstrate the feasibility and effectiveness of this approach. Without additional funds now we fear momentum will be lost.

Senator HILL. Could you estimate how much you have received in private funds?

Dr. CLARK. Well, sir, until 1964, the former polio foundation had been supporting programs in this area. At the time they made their

exodus from the field of arthritis, a total of about \$800,000 was being spent.

It has not been the capability of the Arthritis Foundation to maintain that level, so the program has now dropped back to about \$400,000 with many cuts, and it is—its viability is indeed endangered at this moment.

I want to be entirely clear that I am not asking for the construction of new facilities, but rather for a more effective organization of existing facilities and personnel to include:

A hospital outpatient service to provide continuing ambulatory care;

A core staff of physicians specializing in rheumatic diseases, orthopedic surgery, and rehabilitation medicine; and

A staff of allied health personnel—medical social workers, physical therapists, occupational therapists, orthotists, vocational counselors and nurses.

In addition to providing exemplary patient care, such an organization would have the competence and resources to accomplish the stated research, training and evaluation objectives.

The appropriation I have requested would permit a small but significant beginning for an imaginative program. The essential ingredients of this program are tested by experience and by a recent critical survey and analysis of the arthritis problem by the National Center for Chronic Disease Control.

I am confident that it would serve to demonstrate an effective approach for the control of many chronic crippling diseases.

ENDORSEMENT OF ARTHRITIS FOUNDATION

Mr. Chairman, this testimony has the full endorsement of the Arthritis Foundation, the sole national voluntary health agency working to solve the problems of arthritis, the Nation's No. 1 crippling disease.

The Arthritis Foundation, its 79 chapters throughout the country, its paramedical section and its medical section, the American Rheumatism Association, represent thousands of health professionals, medical scientists and lay volunteers who are giving their time and dedicating their efforts to the conquest of arthritis. The present goal of the foundation is containment of the arthritis problem, but with confidence that the future can bring primary prevention or cure.

An immediate investment of Federal funds rather modest, when added to the current resources of the foundation can bring great human and economic benefits to the American public at minimal cost to the taxpayer. I urge that you gentlemen consider seriously our proposal and let us together take a bold step toward a new and imaginative partnership in health.

Senator HILL. I think you have made a very modest request, Doctor.

Dr. CLARK. Yes, we think it is very realistic, Mr. Chairman.

Senator HILL. We appreciate your statement. It is a splendid statement, and we appreciate it and your presence here. I guess you are busy.

Dr. CLARK. Yes, sir.

Senator HILL. There are a good many people in New York, and a good many of them are suffering from arthritis.

Dr. CLARK. Yes, sir.

Senator HILL. Thank you for your statement.

STATEMENT OF DR. JOSEPH MURRAY, ASSISTANT CLINICAL PROFESSOR OF SURGERY, HARVARD MEDICAL SCHOOL, AND CHIEF PLASTIC SURGEON, PETER BENT BRIGHAM HOSPITAL, BOSTON, MASS.

KIDNEY TRANSPLANTS

Senator HILL. Dr. Krugman, Dr. Klein, and Dr. Murray. We are happy to have you gentlemen here, and we are happy to have you proceed.

Dr. KRUGMAN. With your permission, I would like to ask Dr. Murray to start out.

Senator HILL. Yes.

Off the record.

(Discussion off the record.)

Dr. MURRAY. It is a pleasure to be here, Mr. Chairman.

I am going to discuss transplantation and give a status report.

The first successful human organ transplant was a kidney transplanted from an identical twin to his brother in 1954. I was fortunate enough to be the surgeon involved in that transplant—

Senator HILL. In fact you were the surgeon who made the transplant. You performed it.

Dr. MURRAY. Yes, sir.

This operation, performed as part of a clinical research project on high blood pressure dialysis, and tissue and organ substitution was considered a once-in-a-lifetime feat, little more than a medical curiosity. But within 5 years, success was obtained in other than identical twins, which was in January of 1959, and that patient has just completed his Ph. D. requirements at Indiana University.

Senator HILL. That is interesting. You say Ph. D.?

Dr. MURRAY. In chemistry.

Senator HILL. In other words, he is going to be in science?

Dr. MURRAY. Yes, sir.

At present, over 1,200 kidney transplants have been documented in the Human Kidney Transplant Registry, which maintains records on all kidney transplants on a worldwide basis.

SURVIVAL PERCENTAGE

The percentage survival of all transplants, from parents, siblings, and unrelated sources, continues to improve as reported from individual series and from the registry. Today approximately 70 percent of transplants from living related donors and 55 percent from nonrelated donors will survive over 2 years.

The patient survival is even better because if the transplant fails, the patient may be continued on chronic dialysis until a second or third transplant is performed.

The statistical survival beyond 2 years cannot yet be calculated with certainty, but the yearly dropoff after 2 years appears to be only 3 to 5 percent.

KNOWLEDGE IN USE OF DRUGS AZATHIOPRINE AND CORTICOSTEROIDS

The improving results are due to increasing experience and knowledge in the use of the two drugs: Azathioprine and corticosteroids.

Incidentally, we discovered Azathioprine in our lab at Harvard Medical School. It was an anticancer drug developed in 1958 and then put on the shelf because it wasn't particularly effective, and in one of our informal conferences, we decided to test Azathioprine in our laboratory transplantation in dogs, and found it effective.

ANCILLARY METHODS OF IMMUNE SUPPRESSION

Improving results are also due to the development of ancillary methods of immune suppression, such as local X-ray treatment and the testing of other drugs. It is premature to assess the value of other immunosuppressive aids, such as antilymphocyte serum, lymphocyte depletion, extracorporeal X-ray treatment of blood, and antigen overloading.

It is certain that some of these will make more effective or even possibly replace the currently used drugs, both of which have a certain degree of unavoidable toxicity.

SEARCH FOR AND USE OF NEW DRUGS

The search for new drugs and better methods of immune suppression will continue until a 100-percent effective method with no adverse side effects can be located. Because currently available treatment is relatively successful, it is becoming increasingly difficult to justify morally the testing of newer methods for fear of depriving patients of potentially useful therapy. Therefore, most new drugs and new methods being tested are used in addition to the known effective drug and will be tested as sole methods of treatment only if complications force withdrawal of Azathioprine and steroids.

SUCCESSFUL PATIENT GRATITUDE FOR NEW LIFE LEASE

It must be stressed that successful patients are really superb. An example is a letter from a 4-year survivor of a transplanted kidney from his father.

Senator HILL. How old was his father?

Dr. MURRAY. About 62. His father was a hard-working laboring man, and this man also was a laborer, and we used it successfully. He writes:

I work 45 to 55 hours a week for General Dynamics, direct a Boys' Club of 45 boys, coach basketball, am president of the YMCA, help run track and swimming meets, am active in the Little League and bowl and golf regularly. I guess, like other people, I never fully appreciated the simple things in life until I lost them. Just to be able to get up in the morning and go out and do a day's work is a wonderful feeling. When my three children come and put their arms around me and hug and kiss me, I can't help but feel that I am a lucky man to be given a second chance to enjoy all that life has to offer.

Senator HILL. Did you make this transplant, Doctor?

Dr. MURRAY. Yes, sir.

Senator HILL. It ought to be pleasing to you.

Dr. MURRAY. On the anniversary of the transplant, the patients usually write to say what is going on. We see them regularly, but this is a dividend.

Senator HILL. It ought to be gratifying to you.

Dr. MURRAY. It has been gratifying to be a part of this program, Senator Hill.

Only 50 percent of long-surviving dogs transplanted and maintained on drug therapy can be withdrawn safely from the drugs. The other 50 percent would reject and require reinstitution of therapy. Successful transplant recipients can withstand normal infection, undergo surgical operations, complete normal pregnancies, and lead perfectly normal lives. And we have not withdrawn any drugs from patients because they are doing well.

We didn't believe these patients on drugs would be able to have normal children, but they have produced such, both fathers on drugs and mothers on drugs.

Drug management is no problem in patients after the first 3 months. A successful patient is much easier to manage than a diabetic, therapy being more like taking vitamin pills.

TISSUE TYPING AND MATCHING

The second major category in the study of transplantation biology deals with tissue typing and matching. There is little doubt that the closer the genetic matching between donor and recipient, the better the transplant will function. The current collaborative research program in transplantation of the National Institute of Allergy and Infectious Diseases has accelerated the collection of data from all collaborating groups, and made the evaluation more accurate because of the exchange of sera among the investigators.

More accurate typing and matching will certainly improve the results from all methods of immune suppression. To date, most transplants have been performed without prospective typing. Hopefully, within the next calendar year sufficient data may be available to justify a planned program of prospective typing.

ORGAN PRESERVATION AND PROCUREMENT

The third major item deals with organ preservation and procurement. Chronic hemodialysis and organ transplantation are two effective methods of prolonging life in patients suffering from terminal renal disease. In one way are they mutually exclusive or competitive. In fact, they are complementary because all chronic dialysis programs require transplantation to unload the volume of patients.

All transplantation programs likewise require dialysis programs to prepare patients for transplantation and to carry them through post-operatively if complications or failure occur.

Senator HILL. In other words, they are complementary?

Dr. MURRAY. Complementary, right. We have both programs going on, and we need them both, and most dialysis programs get into a transplant.

If a transplant fails, the patient can be kept alive on chronic dialysis and a second or third transplant performed. There is statistical evidence that secondary and tertiary transplants function as well or maybe even better than the primary transplants.

COST OF DIALYSIS

Senator HILL. I can well understand that from what I have heard in testimony of dialysis. It is expensive, about \$10,000 a year, isn't it?

Dr. MURRAY. The equipment costs about \$5,000 or \$6,000, and the upkeep is about \$1,800, but the prices are coming down in dialysis.

But we have had patients, we have had many patients who have been on chronic dialysis for a year, and if that transplant fails, they don't want to go back, they want a second transplant.

LACK OF DONOR KIDNEYS

A major bottleneck in transplantation at present is the lack of donor kidneys. Ideally all donor kidneys should come from recently deceased individuals—cadavers. Statistical studies of supply and demand in the United States indicate that for liver and kidney there would be an adequate supply from cadavers alone if no legal or social restrictions were present.

EDUCATION PROGRAM

It seems an unnecessary waste that kidneys from automobile accident victims cannot be utilized at the present time. A uniform law and an education program for physicians and patients are timely. This education program would have two parts:

The first would be to encourage volunteer programs and have physicians, patients, and general public become prospective kidney donors by wearing a wallet card indicating that they are willing to give their kidneys for donation. On this card should be the date of their last medical checkup and their major blood groups.

Senator HILL. You have a new thought here, haven't you, Doctor?

Dr. MURRAY. I don't know how new it is, Senator, but it is something we have thought about for years. We have so many patients who need help, and we know we could do it, but we don't have the kidneys.

Senator HILL. But the thought has not been expressed throughout the country?

Dr. MURRAY. I think not. It is within our group.

Senator HILL. That is what I meant when I said, "new."

Dr. MURRAY. It may be.

Senator HILL. I think it is an excellent thought.

Dr. MURRAY. Well, it would be great, because we have found that people want to be charitable, it is inherent in human nature to be decent if the opportunity shows itself, and this is the opportunity to show that you want to give something that will be of no use to you, after all.

Senator HILL. It is going to be a tremendous gift to the recipients thereof.

Dr. MURRAY. It certainly is. We are doing a study of all the donors we have used in the past 15 years, and it is so interesting how much

they have gotten from it, whether the transplant has failed or succeeded.

Senator HILL. That is most interesting. In the past, we have had quite a bit of testimony—so much of it has been on the dialysis. You have brought us a most encouraging message here this morning, I think.

Go ahead, sir.

Dr. MURRAY. A second phase of this educational program would be to have all hospitals adopt a uniform policy through their admitting offices to have all patients on admission sign a statement that they would be willing to give their kidneys in case death ensued. This would put on record the right to remove kidneys from patients dying in hospitals without wasting time to obtain permission for their removal when every minute is precious.

IMPROVING METHODS OF KIDNEY PRESERVATION

Better methods of organ preservation would be another way to increase the number of donor organs. If preservation were effective beyond the current 4 to 6 hours, regional banks of kidneys could be planned to cover certain geographical areas. With a supply of kidneys stored successfully in one area, the prospective recipients maintained on chronic dialysis could be genetically matched to select the best possible kidney for genetic typing. This would relieve the need for living, normal volunteers to give kidneys, eliminate hospitalization and the surgical care of the donors, and also minimize the moral responsibility of removing kidneys from healthy individuals. There is no limit to the optimum time for storage of a kidney as a donor organ. At present, 4 to 6 hour storage is the most that we can reasonably obtain. Within the next 12 months there is a possibility that 24 to 48 hour successful preservation is imminent. If this period of time could be prolonged to 2 weeks or even 4 weeks or 6 months, it would obviously be better still.

The logistics in obtaining kidneys from traffic accident victims seems almost insurmountable. Considering the legal problems involved in the accident, the lack of information regarding the previous health of the victim, and the current inaccessibility of medical institutions to which victims might be brought make this unfeasible. However, if a simple type of kidney preservation system about the size of a small portable refrigerator were available in every medical installation, salvage of these organs would be possible.

INFORMATION DERIVED FROM TRANSPLANTS

Finally, transplantation has produced medical dividends far above and beyond the successful treatment of kidney disease. Replacement of skin from burns, lungs from pulmonary disease, the liver, the heart, and endocrine glands might all conceivably be accomplished in the future as specific treatment for these other diseases. Increasing knowledge about the understanding of many metabolic processes involved in hyperparathyroidism, gout, diabetes, and cystinosis are likely to result. And this information has been derived from successful transplants.

Possibly the most important medical dividend will be the understanding of the causes of high blood pressure in kidney disease it-

self as a result of transplantation. Somewhat paradoxically it may prove that successful kidney transplantation will furnish the knowledge and opportunity to learn the causes of renal disease, thus leading to the next step, prevention.

Possibly with knowledge of prevention of renal disease after this current generation, there would be no need for kidney transplantation in the absence of all renal diseases.

Senator HILL. That is a most interesting statement, Doctor, most interesting and most informative and encouraging, too.

Dr. MURRAY. Thank you, Mr. Chairman.

RECENT ADVANCES IN ALLERGY AND IMMUNOLOGY

STATEMENT OF DR. EDMUND KLEIN, CHIEF, DEPARTMENT OF DERMATOLOGY, ROSWELL PARK MEMORIAL INSTITUTE, BUFFALO, N.Y.

Senator HILL. All right, sir, do you want to talk next?

Dr. KLEIN. Senator Hill, I am grateful for the opportunity to be here.

Senator HILL. We are grateful to have you here.

Dr. KLEIN. I am Edmund Klein, of the Department of Dermatology at the Roswell Park Memorial Institute in Buffalo, N.Y. I have a statement I would like to hand in.

Senator HILL. All right. It will appear in full in the record.

Off the record.

(Discussion off the record.)

Dr. KLEIN. I would like to outline some of the recent advances in allergy-immunology. These advances are going to provide far-reaching benefits for millions of Americans and people elsewhere. Like most major achievements, they open up new hopes and put leads into our hands which we did not have before.

My presentation is a summary of new treatment methods. These have been developed by using the causes of one disease for treating other kinds of diseases.

In other words, we have taken something out of the hands of the devil and put it into the hands of God, to quote from Bernard Shaw.

Senator HILL. I quote the Irish Brigade. You are going to quote the English Brigade.

Dr. KLEIN. George Bernard Shaw seems to fulfill both of these requirements.

We used these types of treatment first for skin cancers and then for precancerous skin conditions. The principles of these types of treatment, however, apply also to other serious medical problems. These principles depend upon a basic immunological mechanism which is responsible for allergic types of reaction. We may, therefore, consider the newly introduced treatment methods as new forms of immunotherapy.

(The statement follows:)

I am Dr. Edmund Klein, Chief of the Department of Dermatology at the Roswell Park Memorial Institute in Buffalo, New York.

I appreciate this opportunity to discuss the field of allergy-immunology. I would like to summarize for you some of the new advances which are going

to provide far reaching benefits for millions of people. This recent progress has resulted from your support of the National Institute of Allergy and Infectious Diseases. As a major achievement, it leads to even more important developments which now lie in front of us.

My presentation is a resume of new principles and methods of medical therapy. We have developed these methods for the treatment of disease by utilizing allergic reactions which, until now, were known only as causes of diseases or as obstacles to the treatment of diseases. The new treatment methods utilizing the causes of one disease for treating other diseases, represent entirely new concepts.

These types of treatment were first used successfully by us for extensive skin cancers and precancerous skin conditions which could not be treated by other means. The new forms of therapy, furthermore, are of importance to a number of other serious medical problems. Since these methods of treatment depend on allergic or immune reactions of the body, they are new forms of immunotherapy.

I would like to show some pictures which will illustrate how these new methods of immunotherapy work and what they accomplish. The first illustration (Fig. 1) shows the back of a man with more than 140 basal cell cancers, a type of skin cancer. This patient also had a large number of basal cell cancers on other parts of his body. He was judiciously made allergic (or hypersensitive) to a chemical called 2,3,5-tri-ethylene imino benzoquinone (abbreviated TEIB). The allergy was produced by applying an ointment containing small amounts of TEIB (5:10,000) to a small area of the patient's skin for approximately three weeks. As is usual when an allergy to a drug is first produced, there was no reaction at first. At the end of the third week, however, the patient became allergic; an allergic reaction of the delayed hypersensitivity type occurred. The reaction consisted of sudden redness, swelling and blister formation, limited to the area to which the allergy producing drug was applied. This initial reaction cleared within 5 days. The ointment containing the same drug (TEIB) in the same concentration (5:10,000) was then applied over the entire back of the patient. This time the allergic reaction appeared within a few hours.

The next picture (Fig. 2) shows the patient at the height of the second reaction to the allergy producing drug. A large number of areas on the back (more than two-thirds of the surface) are covered by the allergic reaction. The reaction is confined to the cancers. Normal skin areas surrounding the cancers do not react. Even the scars from previous surgical and radiation treatment, which are weaker and more subject to injury, did not react to the allergy producing drug.

This photograph also shows a large number of tiny areas, one millimeter or less in diameter, which reacted to the drug and turned red as a result of the inflammation produced. These tiny red areas contained early cancers which were too small to be diagnosed otherwise. Immunotherapy, therefore, is a diagnostic tool for the detection of early or small cancers, as well as an effective treatment. In the next illustration (Fig. 3) the same patient is shown one year after immunotherapy. The back is now more than 99% cancer free. The next three photographs show some of the steps by which this form of immunotherapy works.

In the next illustration (Fig. 4) the reaction of cancerous lesions to the allergy producing drug (applied locally as an ointment) is shown in more detail. The area in which the cancer is present becomes red and swollen within three or four hours. Within a few more hours it begins to blister. The blisters soon break. A crust forms which contains the dead remains of the cancer cells. In this way the cancer cells are destroyed and eliminated. The crusts are demonstrated in the next illustration (Fig. 5). Figs. 4 and 5 show that the intense reactions are sharply limited to the cancer areas; the normal skin next to the cancers remains unchanged. After 4 or 5 days the crusts begin to fall off, leaving normal skin in their place, as shown in the next illustration (Fig. 6). As had been shown in Fig. 3, the patient was freed of cancer without scar formation.

The large numbers of cancers which had been continuously developing in this patient could not be removed with surgery or radiation because the areas of skin involved were too large. Prior to the development of the new treatment methods, the best that could be done for this type of patient was to try and keep up with the rapidly developing tumors by removing those lesions which appeared to be getting out of hand. The other lesions had to be left for observation. Sooner or later one of the numerous untreated cancers would spread beyond the reach of therapy and death would ensue. We are now able to treat these problems effec-

tively. With the new forms of immunotherapy, very large areas of the body can be treated without serious side effects.

Following immunotherapy the patients develop few, if any, new lesions, in contrast to the innumerable numbers of cancers which had been developing previously.

Our research group, in collaboration with other investigators at our Institute, has developed these new methods by which we utilize allergic reactions for destroying cancerous and precancerous growths on the surface of the skin without harmful effects on the normal tissues. The number of patients with precancerous skin lesions in the United States alone is conservatively estimated to be about 5 million.

The new methods of immunotherapy are, at present, primarily of benefit to patients with extensive superficial skin cancers and precancerous conditions. The basic principles, however, which utilize allergic reactions for the treatment of diseases are of more general significance than for malignant disease alone. The principles involve harnessing some of the capabilities of the human body for therapeutic purposes. The same kind of capabilities, when uncontrolled, either produce allergic diseases or cause drug reactions which prevent the treatment of diseases.

I would like to refer to the allergic skin diseases as an example of the various forms of allergic diseases and as the point of departure for the methods we have developed. Allergic skin diseases may be caused by a large number of environmental factors. In addition, they may be produced by almost any drug or chemical. The allergic skin reaction to a drug is frequently so severe that use of the drug must be discontinued. An example is penicillin. Allergic reactions to penicillin may be serious or even fatal, and prevent the patient from using the drug again. There are numerous other examples in which the development of an allergy to a drug has denied the patient the benefit of potentially life saving medication.

Like many other immunological reactions, allergic skin reactions require as a rule two exposures to the allergy producing material. The initial exposure, which is called the sensitizing exposure, produces an impression upon some cells of the body, principally those of the white blood cell system. This impression alerts the cells to regard subsequent exposures to the same material as an intrusion of a foreign material against which the body is now primed to react.

There are two types of immunological reactions by which the body responds to the foreign sensitizing material: (1) immediate hypersensitivity, in which soluble antibodies present largely in a group of plasma proteins known as gamma globulins, react within minutes of exposure to the foreign material once the individual has become hypersensitive to it, and (2) delayed hypersensitivity, in which a foreign sensitizing substance causes white blood cells, believed to be primarily lymphocytes, to respond several hours or days after exposure. It is by these mechanisms that the body defends its individuality from the the invasion of what might be considered foreign elements.

When one deals with inherently complicated problems such as allergic diseases or cancer, it is easier to study them on the skin where they are more readily accessible and more easily controlled than to complicate matters further by studying them inside the body. For this reason we started some years ago to work on several generalized diseases which may affect the body anywhere and therefore manifest themselves on the skin. It became evident, first in animals and subsequently in man, that cancer located in the skin could be developed into a model system. These studies subsequently received limited support from the National Cancer Institute which did not have adequate funds available.

The studies on cancer in the skin as a model system were therefore severely slowed down. Even though major areas could not be developed, a number of important observations were made which provided information on the actions of anti-cancer drugs on tumors that could not have been otherwise obtained. The most important of the observations is related to the development of the new methods of immunotherapy which utilize allergic types of reaction.

In our studies on superficially located skin tumors we found that a number of chemicals produced allergic or delayed hypersensitivity reactions. Several of these chemical substances, when applied after the individual had become allergic (hypersensitized) to them, produced a marked inflammatory reaction in the skin. As I noted with penicillin reactions, a severe inflammatory response resulting from an allergic skin reaction can sometimes be very serious and even life threatening. As a rule, therefore, when such an allergic skin reaction mani-

fects itself, the patient should not have further contact with the sensitizing material.

We have found, however, that some of the chemical substances produced much more intense allergic reactions in cancers or precancerous lesions of the skin than in the normal tissues. The allergic reaction resulted in destruction of the malignant or premalignant tissues, while effects on the normal skin were much less severe or not apparent at all. The normal skin, far from being destroyed, multiplied and covered the areas from which the cancers had been sloughed off, thus producing healing.

These new methods of immunotherapy cause the disappearance of cancer at several stages of its development. In addition to eradication of established cancers on the skin surface, early cancers become apparent before they can otherwise be detected, and so do not reach serious stages. Furthermore, destruction of precancerous lesions prevents their development into frank cancers. Therefore, the new methods of therapy, introduced by us and confirmed by other medical research centers, provide new approaches to the treatment, diagnosis and prevention of cancer. To extend the principles and new methods of immunotherapy to other types of cancer, a specific effort is needed. This may be accomplished through a special task force devoted to the immunology of cancer.

As I have pointed out, we started our studies on cancers located on the surface in order to learn more about the treatment of internal cancers. A great deal of work will have to be done to find out how we can apply our knowledge about external cancers to internal tumors. Initial studies will be carried out on cancer of the mouth, throat and esophagus since they arise from cell types which are closely related to those of the skin (i.e. stratified squamous epithelium). We have promising indications regarding precancerous lesions of the mucous membranes of the mouth, the tongue, the lips and the external female sex organs, such as the vulva and adjacent regions. Precancerous conditions in these areas are known as leukoplakia. They appear as white patches. Until now, surgical removal of the affected part has been the only treatment, and in severe cases this is mutilating.

We have carried out exploratory studies to determine whether immunotherapy can be extended to premalignant lesions of the mucous membranes. These studies are shorter duration and include fewer patients than our work on cancers and premalignant lesions of the skin. Our studies indicate that similar principles apply. This approach has not reached the stage at which it can be considered to be a method of treatment for leukoplakia. The work carried out so far, however, suggests that with further studies, immunotherapy may be expanded to include clinical treatment for this type of problem.

Our studies are examples of research in one area leading to results in another area. The work started in clinical research, led to new basic information, and this in turn led to new treatment methods. These new basic principles and treatment methods have important implications for a large number of diseases which are of special concern to the Institute of Allergy and Infectious Diseases. The rate of progress will largely depend on the support available. At a level of \$5,000,000 the needs in these specific areas of immunology could be met both intramurally and extramurally by a task force and contracts or grants.

Allergic reactions of the delayed hypersensitivity type, such as those described and used by us, have been under intensive study for many years in the intramural laboratories of the National Institute of Allergy and Infectious Diseases. Through Dr. Dorland Davis, the Director of the Institute, and Dr. Maurice Landy, the Chief of the Laboratory of Immunology at the NIAID, a program for collaborating with our group has been initiated.

The extramural branch of the NIAID furthermore has supported studies throughout the country which have provided the background information for our work. We are currently collaborating with a number of investigators whose work is supported by research grants from the NIAID. In addition to the immediate practical applications of our studies, the related basic information and leads are of significance to problems in allergic diseases, tissue transplantation and the body's defense mechanisms against infectious disease.

What is the significance of this work? Our studies of allergic reactions and the technique of cancer chemotherapy illustrate the importance of broad fundamental research in allergy and immunology. Opportunities in this area of research appear boundless, for immunology underlies a wide spectrum of diseases. For instance, Dr. Dixon's recent work has shown that an immunologic mechanism is associated with acute nephritis. Many other complex problems remain to

be solved before we can understand and control the immunologic mechanisms that are responsible for asthma, hay fever, allergic skin diseases, drug reactions and other manifestations of allergy or hypersensitivity for which many millions of Americans find only partial or emergency relief.

The translation of basic research to treating these widespread allergic diseases is a clear mandate. It has resulted in a new concept of using the causes of one disease for the treatment of other diseases. This concept has proven itself as the first large scale medical approach for the prevention, detection and treatment of skin cancers and precancerous conditions, which affect many millions in the United States. The extension of these new immunologic principles and treatment methods to other forms of cancer and other diseases is urgent. However, despite their success, even the new treatment methods for skin cancers are presently available only at a few medical research centers. It is necessary that these methods be made available to community physicians and to the people of this country and the world. This can be done quickly.

The resources however, for fulfilling these needs, with their solution in our grasp, are not sufficient. The decision, gentlemen, to permit the fulfillment of these needs is in your hands.

EDMUND KLEIN, M.D.

Education

University College, University of Toronto, Canada, Honor Course in Physiology and Biochemistry B.A. 1947—1943—47.

Faculty of Medicine, University of Toronto M.D. 1951—1947—51.

University Laboratory for Physical Chemistry, Harvard University, Research Fellow (Fellowship in Medical Sciences, National Research Council)—1951—52.

Children's Cancer Research Foundation, Children's Medical Center, Boston, Mass. Research Fellow (Fellowship in Medical Sciences, National Research Council)—1952—53.

Professional training

Clinical and Research Fellow, Department of Dermatology, Harvard Medical School and Massachusetts General Hospital, Boston, Mass.—1956—58.

Assistant Resident, Department of Dermatology, Massachusetts General Hospital, Boston, Mass.—1958—59.

Academic Affiliations

Research Associate, Children's Cancer Research Foundation, Children's Medical Center, Boston, Mass.—1953—58.

Teaching Fellow, Department of Dermatology, Harvard Medical School, Massachusetts General Hospital, Boston, Mass.—1958—59.

Research Associate, Department of Dermatology, Harvard Medical School, Massachusetts General Hospital, Boston, Mass.—1959—60.

Assistant Professor, Department of Medicine and Department of Dermatology, Tufts University School of Medicine, Boston, Mass.—1959—61.

Chief, Department of Dermatology, Roswell Park Memorial Institute, Buffalo, N.Y.—1961.

Associate Professor of Experimental Pathology, State University of New York at Buffalo, Buffalo, N.Y.—1962.

Guest Professor of Biochemical Engineering, Northeastern University, Boston, Mass.—1965.

Consultative appointments

Children's Cancer Research Foundation, Children's Medical Center, Boston, Mass.

Acute Leukemia Task Force, National Cancer Institute, U.S. Department of Health, Education and Welfare, Washington, D.C.

Advisory Committee on the Biologic Effects of Optical Masers, U.S. Army Medical Research and Development Command, Office of the Surgeon General, Washington, D.C.

ILLUSTRATION OF SKIN CANCER

Dr. KLEIN. With your permission, Mr. Chairman, I would like to show some pictures which illustrate the new forms of immunotherapy. This patient has 140 basal cell cancers on his back as shown in the

photograph. Those 140 basal cell cancers could be counted but there were many cancers which were too small or too difficult to recognize, as we discovered later. The patient had many more cancers on his face, chest, neck, and arms.

We made this patient purposely allergic to a drug known as 2,3,5 tri-ethylene immunobenzoquinone, or TEIB for short. The drug was applied in an ointment at the low concentration of 5/10,000 to a small area on the patient's skin. As is usual with allergic reactions, nothing happened for the first 3 weeks.

Then at the end of the third week, the area of the skin to which the ointment containing the drug had been applied, formed a blister which broke and healed in a few days.

Several weeks after the patient had thus become allergic to this drug, TEIB, we applied the ointment containing the drug all over his back where he had had these large numbers of cancers shown in the photograph.

This time, as is usual in the second or subsequent allergic reactions, it took only 3 or 4 hours for the response to start. The next photograph shows the patient at the height of the reaction.

Senator HILL. I see.

Dr. KLEIN. You can see these various areas involved by cancers as red, encrusted lesions covering two-thirds of the back. The normal skin and other tissues are not affected. In addition to the large lesions, you see innumerable numbers of small red dots, less than a millimeter in diameter. These are cancers which are at such an early stage or are so small that we cannot diagnose them except chemically. However, the drug acts as a diagnostic tool, turning them red—

Senator HILL. It certainly did bring them out.

Dr. KLEIN. It certainly did, sir. Then, as a result of the inflammation which turns these tiny cancers red, the cancerous cells die and fall off in the same way as the crusts which the larger cancers had formed and this, sir, is what the patient looks like 3 months later. The patient is entirely free of cancer at this time. Despite the large extent of cancerous involvement, the treatment has not even produced scars.

So this is the sequence, Senator.

Senator HILL. You did quite a job there, quite a job.

Dr. KLEIN. Thank you, sir.

Senator HILL. Did you let the patient see the picture to let him see what you had done?

Dr. KLEIN. He had a great deal of interest in it as have almost all of our patients. A patient with a similar type of cancer was shown in Life as he looked after he had been freed of all his cancers, with photographs like the ones I have shown you in the background. Contrasted to these pictures of the patient when he had hundreds of cancers, the successfully treated patient in the foreground gave quite a comparison: a picture within a picture.

Senator HILL. It is quite some contrast, I will tell you.

Dr. KLEIN. We certainly think so, sir.

Senator HILL. That looks like normalcy, just about.

Dr. KLEIN. Well, the patient had no lesions at the time this last photograph was taken. This is the type of patient who otherwise develops many new lesions continuously.

Following this course of immunotherapy, he developed four lesions in the space of 5 years, as compared to the hundreds of lesions which he would have developed without the new treatment. So this indicates that with the new therapeutic use of the allergic type of reaction, we can get rid of cancers, we can diagnose them sooner than we could before, and it looks like we are at least cutting down the incidence of new cancers or that we are preventing them altogether.

Before the advent of this type of immunotherapy, nothing fully effective could be done for this kind of patient. One could try to keep up with the lesions that looked like they were progressing very rapidly; the areas of the body surface involved by these many cancers, however, are too large to cut them all out or to cure them with radiation. So one treats only the worst lesions and watches the other apparently less threatening cancers; eventually one of the many cancers got away and nothing could be done about it. Now, with the newly introduced methods, something can be done.

PRECANCEROUS LESIONS

This work was carried out in collaboration with other groups at our institute and at other research centers. The number of patients with this type of widespread cancers is fortunately not very large. However, the method is also applicable to precancerous lesions, and in the next photograph a patient with precancerous lesions covering almost the entire face is shown. These precancerous lesions are called solar keratoses and conservatively estimated, there are 5 million people in the United States who have this type of precancerous condition with varying degrees of severity.

Senator HILL. Five million?

Dr. KLEIN. Yes, and any one of these precancerous lesions may develop into cancer; somewhere between 2 and 5 percent of the lesions which you see spread all over this patient's face will develop into squamous cell carcinoma.

The new immunotherapy brings out a similar type of allergic reaction as had occurred in the patient with multiple cancers. This reaction is shown in the next photo. This patient, too, had at first been made allergic to TEIB over a period of a few weeks. After he had become allergic, the ointment containing the allergy-producing drug at a low concentration—one part per 10,000—was applied to the patient's face. Again within a few hours the reaction occurred. You can see that the allergic reaction picks out the premalignant lesion, as it does with frank cancers, and there is practically no effect on the normal tissues. The precancerous lesions become crusted and when the crusts fall off, they take the dead remains of the cancer cells with them. Again, the patient recovers fully within 8 to 10 weeks and you can see in the next photograph that all precancerous lesions have disappeared without scars.

Now this is of obvious importance to a large number of people in the United States and in other countries. It would be very difficult to treat this kind of problem surgically or by radiation therapy except on a piecemeal basis. Before the introduction of topical therapy, there was no satisfactory treatment.

Equally important, the hidden lesions are uncovered and, at the same time, are eradicated. In this way cancers and precancerous lesions can be caught earlier than by any other method and at the same time are treated before they have caused much more serious problems.

Now, Senator, we have used the skin, and skin cancers and precancerous lesions in particular, as model systems. When one deals with complex problems like those of allergy or cancer, it is much better if you can develop a system which is on the body surface, rather inside the body; one can look at the problem directly, one can easily change the various factors under study, and, above all, one can do so with no harm to the patient.

INITIAL STUDIES SUPPORTED TO LIMITED EXTENT

After our initial studies had been in progress for a number of years, support to a limited extent was obtained from the National Cancer Institute, but the available funds were not sufficient to pursue this approach as intensively as it could have been done.

However, the new immunotherapy methods which I have described, have grown out of this work despite inadequate support which had severely slowed down our studies. This work on the new treatment methods which we have developed, including topical cancer chemotherapy, has now been confirmed at approximately 25 institutions throughout the country. This has been a cooperative study without specific support from any major agency.

UTILIZATION OF ALLERGIC REACTION IN INTERNAL CANCER COSTS

The observation that allergic reactions can be utilized in a specific way so that they will affect one type of cell; namely, the cancer cell, and not its closely related normal counterpart the normal cell next to it, obviously has far-reaching implications. What will this do for internal cancer? To answer that question we are striving to gain a great deal more information, and we have some preliminary information.

Senator HILL. Do you have some now?

Dr. KLEIN. Yes. This initial information is much more tentative than the data which I have presented to you on cancer and precancerous conditions of the skin. The latter studies include topical chemotherapy and immunotherapy on several thousand lesions in hundreds of patients which have been going on for more than 5 years.

The attempt to get inside the body has been going on for less than 2 years, the number of patients is much smaller, and our results are not as good as they are on the outside of the body surface.

LEUKOPLAKIA

This is a photograph of a precancerous lesion on the cheek inside the mouth. The picture shows two applicators pulling back the lips in order to expose the inner side of the cheek.

The whitish area which you see on the inside of the cheek is a precancerous lesion called leukoplakia. This type of lesion occurs in the various mucous membranes inside the mouth such as on the tongue, gums, the roof or floor of the mouth, the lips as well as the cheeks;

these types of precancerous lesion also occur on the mucous membranes of the female sex organs. The next photograph shows the reactions to the allergic stimulus on the patient's skin where the drug has been applied as an ointment. You can see that the patient reacts strongly to a concentration of 5 parts per 10,000, less strongly to 5 parts per 100,000, and least to 5 parts per million. Since the skin area to which the ointment containing the drug at these low concentrations was applied is quite small, 5 parts per million is a very small amount of the drug.

The concentration of the drug which we finally used was 1-2 orders of magnitude below the level of 5 parts per million, at which it produced a barely perceptible reaction on the skin. A yet lower concentration; namely, 5 parts per 10 million was used on the mucous membrane since these internal tissues are much more delicate than the skin.

The next photograph shows the same area of the inside of the cheek where the leukoplakia had been present, after a concentration of 5 parts per 10 million of the drug TEIB in an ointment had been applied to the lesion for 24 hours. If you compare the previously shown photograph of the leukoplakia with this photograph, you can see that the precancerous lesion has disappeared without any irritation or other adverse effects and has left the area looking perfectly normal.

In addition to the visible disappearance of the precancerous lesion, biopsies showed no microscopic evidence of neoplastic cells. However, the leukoplakia in this patient started to recur within 4 weeks. Reapplication of the ointment containing the drug TEIB again resulted in disappearance of the lesion. We are now using a maintenance regimen in patients with leukoplakia with continuous or intermittent reapplications of the ointment. The ointment is held in place by a special bandage, which has been recently developed to adhere to the wet mucous membranes.

These are examples of research which was started in one area, subsequently provided new basic information and was then applied for treatment purposes. We are now able to take the white cells from a patient who had been sensitized and give these concentrated white cells to another patient who had not been sensitized.

The transfer of white cells produces exactly the same reaction as you have seen in these pictures. This has led us to treatment methods which have practical applications as well as to new basic information that may be of help in other areas.

PROGRESS DEPENDS ON SUPPORT OF PROGRAM

The progress, of course, will depend on the support available.

Senator HILL. Certainly.

Dr. KLEIN. At a level of \$5 million one could expect to more quickly with the new treatment methods and also stimulate and support basic research in immunology.

These types of allergic reactions have been under intensive study intramurally at the National Institute of Allergy and Infectious Diseases. Through Dr. Davis, the Chief of the Institute and Dr. Landy the Chief of the Laboratory of Immunology, we have started a collaborative program in order to pursue the new leads further.

We have also been collaborating with grantees and contractors of the National Institute of Allergy and Infectious Diseases. The implications of our studies interrelate with a good part of the work which has been described here before. The basic information is of significance to other problems of allergic diseases such as asthma, hay fever, allergic drug reactions, and many others, for which only partial or emergency treatment is available. The recent progress made by Dr. Dixon's work indicates that a soluble antigen-antibody complex is associated with acute nephritis. This is another area in which there are important leads provided by basic work in immunology.

The principles of the new treatment methods may further apply to the defense mechanism of the body against infectious diseases, for which we do not have adequate therapy at the present, such as a number of fungal and bacterial diseases as well as some diseases caused by viruses.

In regard to the new forms of immunotherapy for cancerous and precancerous conditions of the skin, the wide implementation is practically in our hands. Local chemotherapy and immunotherapy could quickly be turned over to the community physician, while at the present these treatment methods are only available at a relatively few medical centers, and therefore I am pleading for your support.

COST OF OPERATING ONE CENTER

Senator HILL. How much money do you need, doctor?

Dr. KLEIN. I have some figures that I can break down further; to apply these treatment methods and carry out further studies at any one center would cost approximately \$300,000 a year. We were fortunate in working at a State institution where support for this work was provided to a large extent by the State. But this is an exception; other major medical research centers who are collaborating with us are not in that fortunate position. This might be resolved through the regional medical programs. The implementation of new forms of treatment, which would apply to millions of people, would be within the scope of a regional medical program; the program could easily bring these new types of treatment to the community physician, both in a rural area or in a large metropolis. In the course of three to five instruction sessions, the physician in the community could be shown how to use the new forms of topical chemotherapy and immunotherapy, for what types of lesions the methods are suitable, and how to deal with the relatively minor side effects. This would be of particular importance to the southern parts of the United States where skin cancers and precancerous skin conditions are particularly common. The more exposure to the sun, the more common are these cancers and precancerous lesions.

Senator HILL. You recall you were kind enough to come down here several months ago to show me some of these pictures in my office.

Dr. KLEIN. We have come a long way even since then.

Senator HILL. That is what I was about to say. You have done a wonderful job.

Dr. KLEIN. Thank you, sir.

IMPACT OF RESEARCH ON CONTROL OF INFECTIOUS DISEASES

STATEMENT OF DR. SAUL KRUGMAN, PROFESSOR AND CHAIRMAN,
DEPARTMENT OF PEDIATRICS, NEW YORK SCHOOL OF MEDICINE,
NEW YORK UNIVERSITY

Senator HILL. Dr. Krugman, we are happy to have you here again.

Dr. KRUGMAN. Thank you, Senator Hill. My name is Saul Krugman. I am privileged to be a member of the National Institute of Allergy and Infectious Diseases.

I appreciate this opportunity to present a brief statement describing the impact of research on the control of certain infectious diseases of man. On June 22, 1965, I had the privilege of reporting to this committee the remarkable progress in the control of poliomyelitis and measles, and at that time the limited progress in the control of rubella and infectious hepatitis.

Senator HILL. You provided much of the inspiration that caused this committee to put some funds into rubella.

Dr. KRUGMAN. Thank you, Senator.

During the past 2 years the advances in the control of poliomyelitis and measles have continued to be remarkable. Recent developments in rubella research have been very impressive and very encouraging.

On the other hand, infectious hepatitis remains one of the most important unsolved problems in the field of preventive medicine. Respiratory viral diseases still pose a formidable challenge—in spite of significant advances in research sponsored in great part by the National Institute of Allergy and Infectious Diseases.

POLIOMYELITIS

Now, a few words about poliomyelitis. During the past 3 years poliomyelitis, a reportable disease since 1912, has become a rare disease in the United States. The alltime high was reached in 1952 when an epidemic which swept through this country was responsible for the paralysis of more than 20,000 children.

The development and the extensive use of inactivated and then live polio vaccines since 1954 have been followed by a progressive and sustained decline of poliomyelitis to an alltime low of less than 100 cases each year since 1964.

It has been estimated that more than 350 million people in the world have received oral polio vaccine. The safety of this vaccine has been established without doubt. The efficacy of the vaccine is an historical fact. It is still too premature to write the final chapter of the poliomyelitis story. In the meantime the urgent need for the present and for the future is twofold: First, to continue the oral, the use of oral polio vaccine for oncoming generations of children and, second, to continue studies concerned with the evaluation of the duration of immunity following vaccination.

Senator HILL. That is certainly most important.

Dr. KRUGMAN. Yes, we must continue surveillance.

MEASLES

Now, a few words about measles. During the past year, Federal, State, and local groups have combined forces in all-out efforts to eradicate measles as a disease. Since licensure in March 1963, more than 22 million doses of measles vaccine have been distributed in the United States. Thus, a disease which has been uncontrollable since it was first recognized in the year 850 A.D. may soon become a very rare phenomenon in this country.

The impending conquest of measles is particularly impressive in the light of the history of this disease. During an epidemic in the Fiji Islands in 1875, approximately 20,000 people died of measles—a loss of about one-fifth of the native population.

Measles had a tremendous impact on the American Civil War, affecting 75,000 troops and causing approximately 5,000 deaths. I don't think this is commonly known.

Senator HILL. I don't think it is.

Dr. KRUGMAN. Even as late as World War I in 1918–19, it was an important cause of military casualties—90,000 soldiers caught the disease and more than 2,000 died.

The research which led to the development of antibiotics following the second World War provided effective means to treat bacterial complications of measles, and this is why there haven't been many deaths in the United States. However, in spite of a decline in the mortality rate, the disease continued to exact a significant toll in terms of disability caused by encephalitis and other nonbacterial complications.

The beginning of the end of measles stems from the isolation and subsequent attenuation of the virus during the late 1950's by Dr. John F. Enders and his colleagues.

Senator HILL. Up at Dr. Murray's school.

Dr. KRUGMAN. Up at Harvard, yes, sir.

Since 1960 extensive experience has proved the safety and efficacy of live measles vaccine. The available evidence indicates that a single inoculation of the vaccine will probably provide lasting immunity. With the continued cooperation of national and local professional, voluntary, educational, civic and religious groups, the end of measles as a common contagious disease of childhood in the United States will be achieved by 1970, in my opinion. In the meantime, it will be important to continue measles research and surveillance in order to evaluate the duration of immunity.

You have to continue this work, and research in this area must continue.

RUBELLA

Now, I come to a subject which is near and dear to my heart, and that is rubella. I have been interested in rubella for many, many years.

In May 1965 I had the privilege of being a moderator of a rubella symposium at a joint session of the American Pediatric Society and the Society for Pediatric Research. At this symposium, 18 physicians representing rubella research groups from various parts of the United States summarized their observations following the extensive epidemic

of rubella which swept the country in 1964. It is impossible to accurately assess the toll of this epidemic in terms of overwhelming personal tragedy for thousands of parents whose infants were born dead or severely disabled. The cost of rehabilitation of the surviving infants is incalculable.

In the wake of the 1964 epidemic approximately 20,000 to 30,000 infants were born with one or more defects affecting the following organs; heart (congenital heart disease), or the eyes (cataracts or glaucoma), or ears (deafness), and brain (mental retardation). This tragic experience highlighted the need for a safe and effective vaccine.

EXAMPLES OF INFANTS SURVIVING EPIDEMIC

I would like at this point, Senator Hill, to show you examples of some of the infants who survived this epidemic. You can see from these photographs—if you look at the colored photograph first, there is an infant that has extensive hemorrhaging in the skin, and on the other side of that photograph, on the other side of that page, you will see a child who has cataracts, and below this very serious complication of congenital rubella, glaucoma, which is followed in most instances by blindness.

The black-and-white photograph you have is an 11-month-old infant. This infant at 11 months weighs no more than a half pound more than at birth. This infant has severe mental retardation, brain damage, congenital heart disease, and eye lesions.

At the present time, this infant at the age of two and a half years cannot sit, cannot hold its head up, and it is severely retarded. These are the examples of the tragedy of this 1964 epidemic.

Senator HILL. These pictures certainly tell the story, don't they?

Dr. KRUGMAN. Yes, sir; they do. Dr. Cooper of our staff has a rubella birth defect evaluation project, and in his unit he now follows just from the New York metropolitan area 400 infants with birth defects in the wake of the rubella epidemic.

SOLUTION OF PROBLEM

Now, how about the solution of this problem? The prospects for the development of a live rubella vaccine are excellent. The virus was successfully attenuated last year by Drs. Meyer and Parkman of the National Institutes of Health, and the results of the preliminary studies have been encouraging. This research, by 1970—

Senator HILL. By 1970?

Dr. KRUGMAN. It is important that we do this by 1970, because if the Public Health Service is correct, we may have another epidemic in 1970. They occur in 6-year intervals, and the last one was in 1964, so in 1970 there can be another epidemic.

The prospects for the development of a live rubella, as I said, are excellent. The results of preliminary studies with new, live rubella vaccines have been very encouraging. This research provides great hope for the solution of the rubella problem by 1970, and with adequate support and with good luck it should be possible to accelerate this timetable. But it does take work and money.

INFECTIOUS HEPATITIS

Now a few word about infectious hepatitis. The spectacular advances in the control of poliomyelitis, measles, and rubella stem from the successful cultivation of these viruses in tissue cultures. In spite of 20 years of intensive research, the viruses which cause infections and serum hepatitis have not been isolated. The need for a continued effort to solve this important problem is well recognized by many investigators. A report recently by Deinhardt describes encouraging results of hepatitis studies in marmosets.

At the present time other investigators are attempting to confirm and extend these findings. We don't know whether this is the answer to the problem.

In the meantime, many thousands of children and adults will be afflicted by hepatitis each year—until the intensified research efforts provide the techniques to isolate the causative viruses.

RESPIRATORY VIRAL INFECTIONS

Now, about respiratory viral infections. As a pediatrician I am keenly aware of the importance of respiratory viral infections, especially in infants under 1 year of age. It is well recognized that these infections are most severe and most deadly at the extremes of life—in early infancy and in the geriatric age group.

The control of respiratory viral infections presents a formidable problem, chiefly because of the large number of immunologically distinct viruses which are capable of causing disease. Unlike measles which is caused by a single specific virus, respiratory viral disease may be caused by 60 viruses—

Senator HILL. Sixty different ones?

Dr. KRUGMAN. Probably more than that.

However, in spite of this enormous problem, it is essential that research be supported and expanded in order to hack away at these highly prevalent infectious diseases which plague mankind.

NEED FOR RESEARCH SUPPORT

I would like to conclude by saying, Senator Hill, that it has been my privilege to have been a member of the National Advisory Allergy and Infectious Diseases Council for the last 2 years and a member of other Institute scientific advisory groups for other periods. In these capacities, and also as a member of national scientific organizations, I have become familiar with the needs for research in infectious and allergic diseases and with the resources available to support them. It is my judgment that support has not been adequate in recent years and that the budget as submitted by the administration is not sufficient for the job ahead.

ADDITIONAL FUNDS REQUIRED

In my discussion of rubella, infectious hepatitis, and viral respiratory diseases, I have mentioned only a few of the compelling infectious disease problems which affect the people of this country—problems which impose an enormous medical and economic burden. In order to

meet the needs of research on these diseases alone, the infectious diseases, \$4 million more than presently provided in the budget will be required.

Dr. Murray and Dr. Klein have presented the problems of organ transplantation and the immunology of cancer and the need for intensified research on new concepts and techniques of immunologic events. We believe that an additional \$4 million is needed for the accelerated work on these subjects alone.

Thus, a total of \$8 million should be added to the proposed budget for the National Institute of Allergy and Infectious Diseases, thereby providing a final figure of \$102,422,000 for the fiscal year 1968.

Thank you very much, Senator Hill.

Senator HILL. The budget only allowed an increase of \$3,752,000 over last year, and you feel the need for an additional \$8 million, do you not, above the budget estimate, this year's budget estimate?

Dr. KRUGMAN. Above the proposed—yes, above the budget estimate.

Senator HILL. Well, I think what you gentlemen have said here about the steps up to date, the victories won, certainly justifies the means to win these other victories that are right out ahead of us, I believe, with you gentlemen waging the battle.

You have brought us most interesting, informative and challenging testimony.

Is there anything you gentlemen want to add?

Dr. KLEIN. Senator, if I may, I would suggest my statement appear before the discussion of the photographs.

Senator HILL. We will make sure that is done. We certainly appreciate your testimony. It is most challenging. Thank you very much.

SUBCOMMITTEE RECESS

The subcommittee will stand in recess until 2 o'clock.

(Whereupon, at 12:55 p.m., the subcommittee recessed, to reconvene at 2 p.m., of the same day.)

(AFTERNOON SESSION, 2 O'CLOCK, WEDNESDAY, JUNE 7, 1967)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

CHILD HEALTH AND HUMAN DEVELOPMENT

STATEMENTS OF DR. JOSEPH BEASLEY, ASSOCIATE PROFESSOR OF PEDIATRICS, SCHOOL OF MEDICINE, TULANE UNIVERSITY, NEW ORLEANS, LA., AND DR. JAMES BIRREN, DIRECTOR, ROOSMOOR-CORTESE INSTITUTE FOR THE STUDY OF RETIREMENT AND AGING, UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES, CALIF.

Senator HILL. The committee will come to order.

We are happy to have you here with us. We will be glad to have you proceed in your own way.

Dr. BEASLEY. Thank you.

I am Dr. Joseph D. Beasley, professor of pediatrics, professor of maternal and child health and population studies, and director of the

Center for Population and Family Studies at Tulane University School of Medicine. I am testifying on the National Institute of Child Health and Human Development as an outside witness.

Senator HILL. Who is your predecessor in this position?

Dr. BEASLEY. Dr. Platou is the professor in charge of pediatrics. I am a professor in the department. I am also connected with the school of Tropical Medicine at Tulane.

FUNCTION OF NATIONAL INSTITUTE

The National Institute of Child Health and Human Development, a young Institute, will begin its fourth year of operation in fiscal year 1968. This unique Institute, formed for basic research and with no categorical dictates which limit its research activities, is concerned with an understanding of the biological and behavioral processes of the entire human life cycle.

Therefore, the NICHD has been designated as the primary focal point for the solution of many of mankind's major problems. The fulfillment of this responsibility requires that the Institute support study of many complex problems both by individual scientists and by teams of scientists representing different disciplines.

The fulfillment of these responsibilities demands also that it create and maintain an environment which will sustain longitudinal research efforts.

BASIC RESEARCH

One of our major problems today is the fantastic gap which exists between what we know and what, at this point, we are able to apply. Therefore, some argue that we should decrease the amount of basic research and spend more money applying what we have already learned.

It is my opinion that this reasoning is fallacious and dangerous because the more basic information we have, the more rapidly we can eliminate this gap.

PREMATURE BIRTHS

Let us look at two illustrations. First, premature births, the No. 1 factor associated with infant deaths in the United States: A baby born weighing less than 5½ pounds has a higher mortality rate and is also more likely to be mentally retarded. Of all live births in the United States, approximately 7 percent, or about 300,000 each year, are premature births. Millions of dollars are spent each year on the care of premature infants and on the rehabilitation of these children with birth defects or with mental retardation.

The economic and human loss resulting from prematurity is almost immeasurable. While it is true that we have some knowledge of some factors contributing to prematurity, we still do not understand its basic cause; nor do we understand the basic causes of labor and mechanisms by which labor is initiated. If we could get such basic information, we may very well find simple ways to prolong fetal growth prior to birth. However, the lack of this information continues to cost our society immeasurably.

Senator HILL. Do you know anything more tragic than to see a mentally retarded child?

Dr. BEASLEY. No, sir; unless it is a preventably retarded child.

POPULATION EXPLOSION

In addition to premature births, another major technological gap literally threatens the welfare and peace of mankind as well as the very quality and essence of human life. This threat to the world is the current, rapid rate of population growth. We are all aware of the world's population explosion, projected to double the current 3 billion and exceed 6 billion people within the next 34 years; but, in terms of our own growth, these figures pose a major problem in the area of child health care alone.

For instance, in 1960, we had 60 million children 14 years and under. Unfortunately, an estimated 22 million of these 60 million children belong to families with income less than \$3,000 per year. Both the National Academy of Science and the World Health Organization predict that, by the year 2000—just 34 years from now—our childhood population will approach 100 million children 14 years and under.

Such a change in the total number of children in our population, along with the disproportionate increase within the lower socioeconomic segment, is going to drastically affect every aspect of our society, including the way we practice medicine.

In other words, we in this country are going to be forced to spend an increased amount of money per child on a larger number of children.

In order to protect our most precious asset, the potential of the individual child, we face a serious challenge to enhance, least of all to maintain, our current standards.

If the population problem is serious for this country, it is more grave for developing countries. With such a marked increase in their total population, the current and serious problems of those nations will be vastly compounded during the next three decades.

It is imperative that a way be found to decrease the growth in world population and to bring about a balance between the number of people and the resources available to support this population.

If we do not solve the problem of human quantity, indeed, we face a threat to human quality. In fact, if we do not soon begin to show our concern for the health and welfare of the child throughout the world, the rights and welfare of our own children will be in jeopardy.

BEHAVIORAL AND BIOLOGICAL KNOWLEDGE

A complex problem? Indeed. Yet, such a complex problem requires very basic information, basic information of both behavioral and biological elements.

For instance, behavioral knowledge must be obtained about basic drives of individuals in various families, within various cultures which determine such decisions as child spacing and family size.

At the same time, biological knowledge must be obtained in order to produce contraceptives which are both safe and easily applicable to a large population as well as being acceptable within the various cultural frameworks.

In this area, as yet, the pill and intrauterine devices are major breakthrough but still only intermediate steps which must be replaced by more effective methods.

More effective methods can be found only through an understanding of the basic processes of human reproduction, processes so complex

with variables so great that sustained research as outlined in the NICHD population research program will be required.

In essence, if we are to solve one of the most basic and pressing problems of all humankind, we must have more information, information obtainable only on a sustained research program.

It is important to realize that once basic research and training programs are established and research effort begun, a funding stalemate over a short period, even 1 or 2 years, can seriously impede progress or, in some instances, completely destroy all momentum.

It is imperative, therefore, that the funding for this Institute be not only liberal but consistent.

BUDGET RECOMMENDATIONS

This afternoon, I have tried to explain that your decision has vital implications to the current generation and will have repercussions for generations to come. Now, I would like to make a comment on the budget recommendations.

It appears that the major foundations have been spending at maximum capacity in the areas of reproductive physiology and population research. Apparently some foundations have been funding from their capital in order to support this research. Now these institutions, no longer able to spend capital and limited to income, must decrease their research efforts.

Therefore, to avoid the inherent danger of lessened effort, it is imperative that adequate funding become available to the National Institute of Child Health and Human Development. Because of its uniqueness in unlimited scope of research and in its concern with understanding the entire human life cycle, the National Institute of Child Health and Human Development is the most feasible, long range, sustaining, and coordinating focal point for such necessary efforts.

With awareness of a war in Vietnam, a tight budget, and your committee's sensitivity to recommending increases over the President's budget, I still believe that special consideration must be given the Institute of Child Health and Human Development.

It is absolutely imperative to the welfare of this Nation, both in human and in economic terms, that research, training and operational activities of the National Institute of Child Health and Human Development be adequately supported. Less will jeopardize the progress made in the last 3 years.

INCREASES RECOMMENDED

Specifically, as an absolute minimum, I recommend the following increases over the President's budget. First, \$5 million for research grants. An additional \$5 million, for a total of \$47,931,000 to support all five of its program areas, will still leave a sizable number of approved grants unfunded in 1968.

Second, \$2 million for training grants. A total of \$11,762,000 is desperately needed to face the most crucial problem, critical shortage of research personnel, confronting the Institute. The increase of \$143,000 already in the President's budget will permit the Institute to award only two more grants than were awarded in 1967.

Third, 50 positions and \$1 million for direct operations. A total direct operations budget of \$12,826,000 and 543 positions are required for the Institute's direct operations including the new Gerontology Building in Baltimore which is scheduled to open in October 1967, and for research in reproduction related to family planning to be carried out in new facilities to be made available to the Institute in 1968 and by contract.

Senator HILL. Have you had an opportunity to visit that building yet, Doctor?

Dr. BEASLEY. No, sir.

Of the above recommendations, \$2.5 million should be designated for population research only. This amount to NICHD, for population research alone, would relieve immediate needs for an additional \$1 million in research grants; \$400,000 in training grants; and \$700,000 in direct operations and would provide 20 additional positions in the population program.

The budget recommendations above represent the minimum amounts which, in my opinion, will allow the National Institute of Child Health and Human Development to maintain programs developed over the past 3 years.

I would like to make it very clear to the committee, however, that I do not feel that the current NICHD program is adequate in either concept, funds, or personnel.

POPULATION EXPLOSION PROBLEM

For instance, this administration and other world leaders have repeatedly said during the past 3 years that "aside from the problem of war and man's hostility to man, the population explosion constitutes mankind's second most important problem."

In my opinion, there is ample evidence to justify placing the population explosion problem at this high level.

This country, in order to maintain peace and to protect the Nation is spending over \$70 billion a year. This constitutes a significant proportion of our gross national product of around \$750 billion; and, yet, what are we doing concerning our second most important problem, population?

I realize that various governmental agencies are concerned with population problems and that efforts are being made to coordinate these activities. Yet the magnitude of this concern is not reflected in the President's budget recommendations for fiscal year 1968 of a total \$68,621,000 for the NICHD with only \$8,100,000 for the population program.

This order of funding, in my opinion, is completely unrealistic to the problem. Let us consider the justifications for our Nation's policy in this regard. This either is not a major problem and the budget is, therefore, adequate or it is a major problem but the administration is not ready to make the "bold and daring response" requested by President Johnson in his message to Congress, February 2, 1966. Or it is a major problem and adequate action will be taken.

You gentlemen, must make this decision; but should you agree that this is a crucial problem and one which warrants commensurate action, you will not only recommend an adequate budget increase but will recommend a subcommittee to further study the relationship between the magnitude of this problem and funds necessary to its solution.

Thank you.

Senator HILL. That is a good suggestion you have about making a further study.

It is a good statement. We appreciate it.

STATEMENT OF DR. BIRREN

All right, Dr. Birren, now we will hear from you.

Dr. BIRREN. I am Professor James Birren of the University of Southern California, Director of the Rossmoor-Cortese Institute for the Study of Retirement and Aging which is a component of the university devoted to research and training on the processes and problems of aging. As professor of psychology, I teach graduate students from psychology and other sciences.

Previously, I served for many years in the research laboratories of the National Institutes of Health.

When I discussed with President Norman Topping of the university my coming here, he urged me to come and asked me to send his regards to you.

Senator HILL. Give him my warmest and best. I have a great regard for Norman Topping. I regretted to see him leave but I think you are fortunate to have him. He is a wonderful man.

RESEARCH AND TRAINING PROGRAM

Dr. BIRREN. I am delighted that I am here to speak in support of the research and training programs of the National Institute of Child Health and Human Development. The establishment of this Institute in 1963 and its subsequent efforts have been most timely in the promotion of scientific and professional efforts that support the health and well-being of our citizens throughout the lifespan.

IMMEDIATE ISSUES

Rather than dwell on my high regard for the objectives and activities of the Institute, I want to emphasize in my comments those issues of the immediate present and near future that warrant, in my opinion, special attention. The most immediate issues are: first, the adequate support of training; second, the need to support research and training in the behavioral sciences; and third, the need for adequate support of the Gerontology Branch in Baltimore.

Fourth, of broader concern is a projected necessity to establish Institutes on Aging in various universities and medical schools throughout the country which will conduct research and training. Fifth, finally, there is also a distinct need to give attention to the scientific and professional knowledge system within which the Institute and its programs function.

NEED FOR TRAINING QUALIFIED SCIENTISTS

The most serious and pressing need is to train qualified scientists who will provide the knowledge base for services in our technical society. The projected increase of \$143,000 in the President's budget for training grants in 1968 is so small that it provides little expansion of effort in relation to rising costs.

The previous speaker said this might fund about two new projects. I think in the face of rising costs we might not even be able to do that.

Senator HILL. That is a small increase, isn't it?

Dr. BIRREN. Yes, sir.

Not to add substantial funds to this effort will, in my opinion, damage initiative as well as create a knowledge crisis in the years ahead. The need for training projects in our universities and medical schools to support the objectives of this Institute leads me to recommend an increase in training funds in 1968 of a minimum of \$2,800,000 to yield a total of \$12,562,000.

BEHAVIORAL SCIENCES

There is a growing consensus among scientists and the informed public that more effort needs to be directed to the behavioral sciences. Matters of health and well-being in our society increasingly involve information of a behavioral and social character.

This information is often lacking because the demanding tasks of prior years did not lead us to see so clearly as we do now, the vital nature of this information. How children develop into healthy, productive adults and into healthy, independent old age involves the efforts of behavioral scientists along with those of their biological and medical colleagues.

We do not now have enough information about how normal development and aging proceed to draw many implications, let alone conclusions, as to how to reduce the problems that occur in the several phases of the lifespan—infancy, childhood, the expansive, stormy years of adolescence, the hard-working middle years, and old age.

Aging, for example, must be studied at the conditions and processes of the lifespan that will give us the knowledge to optimize our existence.

The developmental behavioral sciences, in concert with developmental biology, should be encouraged to extend their efforts in significant ways.

RECOMMENDED INCREASE IN RESEARCH FUNDS

My convictions that health and well-being in our country are increasingly dependent upon new types of information from the behavioral as well as from the biological sciences, lead me to recommend an increase in research funds in the amount of \$5 million over the 1968 President's budget for a total of \$47,931,000. While this amount is not adequate to fund every approved grant, it should help to stimulate efforts to build a strong behavioral science program.

GERONTOLOGY BUILDING

Support of the Gerontology Branch: the new Gerontology building in Baltimore, with its fine research facilities, is scheduled to open in October 1967. This building is of considerable interest to the scientists and to the public concerned with problems of aging.

About 300 Federal employees will occupy the facilities when the building is fully operational. At present, the head of this facility, Dr. Nathan Shock, has about 85 persons employed in existing space and is authorized to hire 35 additional persons for a total of 120 in the current fiscal year.

To pursue the original goals of this program, I believe new positions must be created now. In the President's budget, 30 new positions have been provided.

I recommend an additional \$250,000 and 50 positions for fiscal year 1968 be made available to the NICHD.

Senator HILL. Over the 30 recommended?

Dr. BIRREN. That is right. Because I think that excellent building has to be staffed. I was there 3 weeks ago and I think it is a very promising venture.

Senator HILL. You were pleased with the layout and everything?

Dr. BIRREN. Yes, sir. It is on separate Federal land but it is adjacent to the City Hospital buildings and they are connecting it with a closed ramp.

RESEARCH AND AGING

I think the whole area of research and aging needs fuller comment. If we project ahead just a few years we may well be staggered by the services that will be required by the increased numbers of older persons, rising standards of needed services, and rising costs.

An economist I respect has projected that by 1975, only 8 years from now, Federal expenditures for all services to the aged will amount to \$39 billion annually. To reduce such an economic load and to increase the quality of the life of our aged citizens we should increase the training of qualified scientists so that we can increase the efficiency of our services through scientific knowledge.

We need to have institutes within which such training can be carried out and laboratories within which new research efforts can be organized.

The magnitude of the issues of health and well-being of the aged demand increased attention. We lack organizations within which any substantial increase in training and research can be carried out.

It is important that we attempt to build and support a limited number of facilities in universities, medical schools, and other nonprofit institutions that will give the needed focus.

INSTITUTES FOR STUDY OF AGING

I recommend the consideration of construction of institutes for the study of aging on a favorable matching basis, 3-1.

Senator HILL. Three Federal to one local?

Dr. BIRREN. Yes; this was a similar pattern to the mental retardation centers.

These should be located on the grounds of strategically located institutions which have the interest, commitment, and capability for development and management of such institutes.

Attention should be given to obtain the proper balance of scientific effort among the biological, behavioral, social, and medical sciences.

Construction and support of between five to 10 institutes would result in increased administrative efficiency by concentrating efforts as well as in the improvement of training and research. Such construction and planning could extend over a 5-year period with costs per institute ranging from \$2 to \$6 million depending on the scope and specialized nature of the research training.

EXCHANGE AND UTILIZATION OF INFORMATION

A last point about needs for research on aging concerns the information system into which the institutes might fit. I recommend specific attention to the mechanisms of exchanging information between investigators and institutes.

The NICHD ought to expand its central information services so that investigators and trainees supported through its grants could rapidly secure current publications and data.

Senator HILL. Don't you think that is most important?

Dr. BIRREN. Yes, we will frequently spend on an average of \$25,000 for an individual research project and spend no more for the exchange of information.

We must mechanize our knowledge system to insure rapid exchange and utilization of information. While I hesitate to make a dollar recommendation, I do believe that serious consideration should be given to increasing the technical staff of the NICHD to support scientific information systems.

While this has particular relevance to the creation of institutes for the study of aging, it touches upon all programs of the NICHD. It relates to the need to unify scientific information so that it can be used to promote our health and well-being, and yet not distract or dull the cutting edge of highly specialized scientists and professional personnel.

An advanced information system of the NICHD would do much to integrate scientific information in relation to a changing mixture of problems associated with developing, maturing, and aging.

Senator HILL. Your whole statement was very fine. We certainly appreciate it. Thank you very much. It will be most helpful to us.

GENERAL RESEARCH AND SERVICES

STATEMENT OF DR. H. STANLEY BENNETT, DIRECTOR, LABORATORIES FOR CELL BIOLOGY, UNIVERSITY OF CHICAGO, ILLINOIS

INADEQUACY OF BUDGET REQUEST

Senator HILL. Dr. Bennett.

You proceed in your own way, Dr. Bennett.

Dr. BENNETT. I believe you have had an opportunity to look at the prepared testimony which I brought here and since the time is short I would prefer, with your permission, to state a little bit about the reasons why I think the proposed appropriations as submitted from

the Bureau of the Budget will be insufficient for the needs of the people of this country.

Senator HILL. We will have your statement appear in the record.

Dr. BENNETT. I will be pleased to have it appear.

Senator HILL. We will have it appear in full. You proceed now.
(The statement follows:)

Senator Hill, honorable members of this committee, may I thank you for your courtesy in allowing an opportunity for this citizen to present his viewpoints relating to appropriations for those portions of the budget of the National Institutes of Health which support activities of the Division of Research Facilities and Resources.

I am the Robert R. Bensley Professor of Biological and Medical Sciences at the University of Chicago. I served for five years as Dean of the Medical School at Chicago, and for twelve years on the faculty of the Medical School at the University of Washington. Except for four and a half years of service in the Navy Medical Corps in World War II, I have spent my entire professional life of over thirty years in research and teaching in biological and medical sciences. I speak thus from a long familiarity with the state of our knowledge upon which the health of our fellow citizens depends.

I am not old enough to remember the terrible epidemics of cholera, typhoid fever and diphtheria which ravaged our country during the last century, but which no longer plague us, thanks to knowledge gained from research, to the skilled application of this knowledge, and to its dissemination, through good teaching. My own father contracted typhoid from swimming in the Cumberland River near Nashville in 1890. Though desperately ill, he recovered, but his family mourned the loss of two children who died in infancy. In those days, every family faced tragedy from infectious disease.

In my student days, lobar pneumonia, tuberculosis, and meningitis represented fearsome killers, and polio crippled thousands every year. Through research, knowledge was gained which led to great reductions in losses to these and to other infectious diseases. The life of my own daughter, Anna, now the mother of our third grandchild, was saved when she was three or four years old, from the prompt application of new knowledge gained through research. She developed a fulminating and rapidly spreading streptococcus infection which was stopped in its tracks by penicillin, then newly discovered, leading to a dramatic recovery which we thought to be almost miraculous. When playing with my handsome young grandson, I am reminded of the debt I owe Fleming and Florey for discovering the agent which saved the life of the boy's mother. We are grateful, also, to the agencies which supported financially the research leading to these discoveries.

Thanks to the research of Dr. Enders, of Dr. Salk, of Dr. Sabin, and of others, poliomyelitis has almost disappeared from our country, through the discovery of effective preventive vaccines. Here the personal impact of the research is less evident to the individual family than in cases where a desperately ill child is saved by application of a recent discovery. As the polio vaccines work, the vaccinated child just never gets the disease yet the absence of the crippling affliction in family after family throughout the nation is seldom noticed by individual parents. But we know that many of these families would be facing trial and tragedy, had vaccines not been discovered. Members of the Congress can rightfully take pride and credit for their statesmanly part in supporting, through authorization and appropriation, much of the research which made these discoveries possible, and the research training which qualified some of the scientists who participated in the work. Of course, state and private agencies also have important roles in supporting medical research. In partnership with these non-federal agencies, the federal support holds an honored, predominant place, for which a grateful and healthy constituency extolls its congressmen.

But much remains to be done, as our citizens are not yet free from the fear of dread disease. Cancer, heart disease and stroke threaten those who pass middle age, and genetic disease and injury will afflict our young. The problems before us are formidable in their complexity. We can expect them to yield little by little as new knowledge and technology is discovered. Congress can do much to accelerate this yielding by statesmanly action in providing adequate support for the research and manpower needed. Success will create a grateful, an appreciative, and a healthy citizenry, free from many of the apprehensions and afflictions which now beset them.

The President, and the Bureau of the Budget, in recommending appropriations to the Congress, have not, in this citizen's view, made realistic provision for the health needs of our people. For the support of medical research and research training, one finds the fiscal recommendations in short measure. In recognition of the necessity for resources and facilities for research, the figures in the President's budget reveal alarming deficiencies which threaten to cause a faltering and a lessening of momentum for a large part of our health-related research. These shortcomings can be seen clearly in the proposed budget for the Division of Research Facilities and Resources of the National Institutes of Health. In order to assist this committee in assessing these matters, I now present a chart which compares the President's recommendations for appropriations for the work of this Division with the necessities of the several items as perceived by this citizen.

Citizen's budget for general research and services appropriation for the Division of Research Facilities and Resources, Office of International Research, Division of Computer Research and Technology and Medical Engineering Development, health research facilities construction appropriation

	General research and services		Other appropriations	
	President's budget	Citizen's budget	President's budget	Citizen's budget
Division of Research Facilities and Resources:				
General clinical research centers.....	\$30, 443, 000	\$44, 330, 000	-----	-----
Scientific evaluation.....	305, 000	305, 000	-----	-----
Special research resources.....	10, 850, 000	20, 680, 000	-----	-----
Animal resources.....	5, 100, 000	8, 400, 000	-----	-----
Primate centers.....	10, 500, 000	12, 600, 000	-----	-----
Fellowships.....	200, 000	280, 000	-----	-----
Training.....	318, 000	512, 000	-----	-----
General research support ¹	-----	-----	\$61, 700, 000	\$72, 100, 000
Health research facilities ²	-----	-----	35, 000, 000	180, 000, 000
Direct operations.....	4, 298, 000	5, 410, 000	-----	-----
Subtotal, DRFR.....	62, 014, 000	92, 517, 000	96, 700, 000	252, 100, 000
Office of International Research.....	14, 105, 000	-----	-----	-----
Division of Computer Research and Technology.....	4, 675, 000	-----	-----	-----
Medical engineering development.....	347, 000	-----	-----	-----
Total, general research and services.....	81, 141, 000	-----	96, 700, 000	252, 100, 000

¹ Provided by allocation from the research budgets of the various National Institutes of Health.

² Appropriated independently under the Health Research Facilities Construction Act.

Let me start my discussion of this citizen's budget by mentioning once more, with gratitude, the preservation of beloved members of my own family through the application of discoveries made possible through research. One can safely say that every family in our country has similar reasons to be thankful for health and for sparing of loved ones, and for these benefits, the wise support of medical research by the Congress over many years has an honored and essential role.

In addressing ourselves to the ills and diseases yet unconquered, the fundamental part played by the Division of Research Facilities and Resources deserves special emphasis. This part of our splendid National Institutes of Health has responsibility for the basic resources required for the accomplishment of biomedical research throughout the country. Just as land must be cleared, machinery designed and constructed, and transportation provided before food can be delivered to the markets for purchase by the housewife, so laboratories, computers, animal resources, clinical research centers, and the like, must be set up and maintained so that research can be done to save lives threatened by cancer, heart diseases, and other remaining threats to health and longevity. And just as our country finds it must once more expand our base for food production, so must we now expand our base for reducing human suffering and prolonging the lives of our people. For this need, the President's budget is dangerously weak. It must be brought realistically into line with our nation's requirements or the strength of our medical research will falter and the aspirations and hopes of our citizens dismayed.

Let us look at some of the specific line items in the budget. The President recommends 35 million dollars as federal matching money for Health Research Facilities. Two or three years ago, the Congress, recognizing the growing national

need for laboratories for medical research, increased the authorization for annual appropriations of federal health research facility construction funds from fifty to nearly one hundred million dollars a year.

The country is rapidly expanding its medical school plants in order to meet our rising need for physicians. Last year Congress passed legislation authorizing the establishment of federal standards for housing and care of animals used in medical research. The need for new and remodeled research facilities is undiminished. A huge backlog of excellent construction proposals lies before us, sufficient to utilize more than the maximum amount now authorized. Our medical schools, hospitals and research institutions are capable of raising non-federal research construction funds sufficient to match more than the current federal authorization, which is, in turn, nearly thrice the sum recommended by the President. Much of our research is threatened by the difficulties some institutions face in bringing their animal facilities up to federal standards. These needs of research facilities construction, clearly evident to anyone who has studied carefully our national research picture, require an immediate federal appropriation for health research facilities of 180 millions for the coming fiscal year, and a raising of the authorization of this item to two hundred million a year. Federal investment in health research facilities of this magnitude is needed to house the research expansion required for our nation's health.

Another research necessity facing acute and chronic financial malnutrition on the basis of the President's budget is the item for Special Research Resources. Here the President recommends something under eleven millions, whereas the national need is about double this. I have estimated our need at a little over twenty million dollars, and recommend an appropriation at this level. Under this item, our nation supports large biomedical computer centers, laboratories for the pilot preparation of rare enzymes and other biochemicals not yet ready for commercial production, and other special and costly research resources which serve the needs of many separate biomedical research projects. These large resources have capacity far beyond the needs of any single research project, and costs beyond their budgets, but, through the provision of computation or other expert services, greatly enhance the productivity of many other project grants, and extend their capabilities to achievements which otherwise would be impossible.

Expansion and strengthening of our national effort in biomedical computation is especially urgent. This brilliant technology which—some economists tell us—is more than any other single development responsible for our nation's strength in business, science, economics and arms, is capable also of contributing greatly to health. One can reasonably expect that research will teach us how to use computers to aid us in diagnosis, in tracing and stopping epidemics, in handling hospital records and medical histories of patients, in identifying antidotes for poisons, in processing laboratory data, as well as in handling data and calculations from research. The full development of computer technology will require much more research, but offers promise of very large savings in costs of medical services.

Development of instrument resources is also essential for research and for direct patient care. The management of severe heart disease, the diagnosis of cancer, the determination of the nature of anaemias, usually requires the application of complex instruments which, a few years ago, were in the research and development category. Thus a constant effort in instrument development research is necessary for preserving our effectiveness in diagnosis and care of the sick. Several bioinstrumentation development laboratories are supported in this country through NIH grants. These require additional support, and more laboratories are needed. It is particularly important that several centers be established for development of high voltage and high resolution electron microscopy, and of novel forms of scanning and analytical electron microscopes. The electron beam is a powerful tool for revealing fine details of structure in living things. Even in its present crude form, the electron microscope has revolutionized the sciences of anatomy and pathology, and has given us profound new understanding of secrets of life and of disease processes. With further development, it may permit us to read out directly the structure of complex biological molecules, to picture individual atoms, and to reveal detailed chemical make-up of cells and tissues. The consequences of such developments for understanding of cancer and heart disease are potentially of great value to health, and justify substantial national efforts to increase our capability in electron and ion beam optics as applied to biomedical research. As immediate objectives, we should establish two or three one-million volt electron microscope research and development facilities in this country, and initiate work on five-million volt instruments.

These instrumental, animal, and needs in the Special Research Resources area are so pressing that the program must be promptly expanded. An appropriation of \$20,080,000 is required for the coming fiscal year.

The Clinical Research Centers are threatened with crippling under-funding in the President's budget. These centers are absolutely necessary for translating scientific discoveries into practical procedures which doctors can use for the benefit of patients. New knowledge is of little value, unless it is made available to the public in a useful form. This is what the clinical research centers do.

Several thousand people die each year in this country because of kidney failure. Such persons are overwhelmed by internally generated poisons which normal kidneys eliminate, but which accumulate to fatal levels in the absence of proper kidney function. Basic research in the past has taught us what the kidneys do and much about how they do it. In persons with kidney failure, we can remove the poisons for a time by purifying their blood with an artificial kidney, or by inserting in the patient a transplanted kidney from another person. In the first case, the artificial kidney is an expensive piece of equipment, and skilled attendance is required to administer the treatment, which must be given about twice a week for the rest of the life of the patient. There are serious risks of infections and side effects, and meticulous attention to detail is needed. Research is necessary so we can make the procedure safer, cheaper, and more effective. If one chooses the course of kidney transplantation for a patient in kidney failure, one faces a series of dangers and problems just as serious. Usually the body tries to destroy the transplanted organ, recognizing it as a foreign tissue, and treating it as it would invading foreign bacteria or viruses. Physicians have tried to prolong the life of the transplanted kidney, and hence of the patient, by suppressing the rejection mechanisms, but this renders the patient more vulnerable to infection. Thus, the prolongation of life by transplanted kidneys has been disappointing for most patients of this kind, though some have survived for several years.

Clearly, many lives can be prolonged if our ability to manage permanent kidney failure can be improved. Research directed towards these ends must be carried out on human patients. Our clinical research centers serve as our main national resource for this work, and in them, research carried out has already brought noticeable improvements which can now be used for the benefit of patients throughout the country. But much more research is needed before we can really manage these patients in a way satisfactory to themselves and their families, and this research, realistic support of clinical research centers is needed.

The clinical research centers have helped us develop effective treatments for some diseases thought, heretofore, to be incurable. Hodgkin's disease—a malignant growth of lymph nodes—has yielded to clinical research at Stanford, where suitable radiation doses and procedures were carefully worked out. Many patients with this once fatal disease seem to be cured entirely, and new hope is at hand for sufferers from Hodgkin's disease as knowledge of the Stanford research spreads throughout the country.

In clinical research centers elsewhere, other improvements in cancer treatment are under way. At my own University of Chicago, some years ago, Professor Charles Huggins discovered that some cancers would respond favorably to hormone treatment. For this discovery he received the Nobel Prize last winter. In the clinical research center at the University of Chicago, doctors are now exploring improved methods of hormone treatment of certain cancers, trying combinations of hormones with radiation and with chemotherapy, searching for ways to prolong life further.

Many persons are now alive whose lives were saved from sudden heart failure by cardiac resuscitation, or whose plugged coronary arteries have been opened by delicate heart surgery. The happy families of these survivors can thank clinical research for the continued presence of their loved ones. Many persons are threatened with diseases or conditions for which satisfactory clinical management is not available. For these millions, our Clinical Research Centers offer a golden hope.

Yet, for these suffering or threatened people, the President's budget offers only a declining program. The cost of hospitalization is rising, and for this thirty million dollars in the budget for Clinical Research Centers, a diminishing level of activity and a decrease in number of research beds is in store. Does the Congress really want to see us falter in the face of so much suffering and need? In order to maintain our centers at full strength in the face of rising

costs, an appropriation of \$44,330,000 is required—nearly 50% above the Bureau of the Budget figure. I am amazed and dismayed at the niggardly budget recommendation for this item. This paltry sum, necessitating a cruel cutback in our nation's clinical research, cannot be defended by knowledgeable, humane people, familiar with the human lives and suffering which are at stake.

I turn next to Animal Research and Primate Centers. Medical research requires resources of special animal strains from which many research laboratories can draw. Especially valuable are strains of experimental animals of no commercial utility, which carry genes for characteristics which duplicate or resemble human characteristics or disease. Models of human disease or of human physiology represented in such animals greatly facilitates research into those diseases, and expedites the gaining of results beneficial to man.

The regional Primate Centers are devoted to study of animals most closely related to man genetically. Seven have been established in selected regions about the country, and in them are very valuable stocks. Some strains, like the orang-utans of the Yerkes Primate Center in Atlanta, may soon become irreplaceable through extermination of the wild stock in Malaysia. Primates have reproductive systems very much like those of humans. Their brains and nervous systems resemble the human ones better than do those of any other animals. Moreover, primates share our susceptibility to many diseases and even show patterns of behavior which can provide lessons to us. For these reasons, primate centers permit research endeavors of particular importance to human welfare.

The budget proposals submitted by the Bureau are insufficient for our national needs. As I perceive them, for Animal Resources, \$8,400,000 is required, and for Primate Centers \$12,600,000.

May I now draw your attention to the item entitled, "General Research Support." Funds for this purpose are drawn from budgets of the several Institutes of the National Institutes of Health and are allocated to the Division of Research Facilities and Resources for distribution to research institutions in amounts varying with their levels of research and research training activity, the more active and productive institutions receiving the larger appropriations. The President's budget mentions nearly sixty-two millions for this item, but from my experience and knowledge, I find this inadequate, and recommend \$72,100,000.

I know of the great value of this fund from first-hand experience, as I served for five years as dean of one of our great medical schools, and came to learn how general research support funds function to provide essential flexibility for the institution's research work. Of course, project type research grants form the mainstay of Public Health participation in biomedical research at the University of Chicago. These grants are very useful, but they have a certain budgetary rigidity and the reviewing processes consume a good deal of time. Moreover, they cannot be programmed to cover all the research needs of the institution, nor can a single project grant budget, as projected over several years, reflect accurately the unforeseen and unexpected turns and needs of research. The General Research Support Funds provide an essential resource to be assigned by the institution in accordance with local needs and necessities. Used in this way, they permit substantial economies in use of federal and local funds, and provide more research for the dollar. They are essential in many institutions as a resource which can be used to initiate research and research training of new faculty members while their research grant applications are in process of preparation and review, and to provide for orderly completion and termination of research work when the expiration of the term of project grant support does not correspond accurately to the course of the research work itself. In some institutions, General Research Support Funds are used to help maintain some central resource, such as an animal facility, which is utilized by many research projects. From my personal experience and from that of my institution, I can vouch for the importance and value of these funds, and for their contribution to the public interest, and foresee a need of \$47,100,000 for this activity.

The same principles outlined above justify confidence in and additional funds to the extent of \$12,000,000 for the Biomedical Sciences Support funds, which contribute flexibility and economy in a similar manner to institutions other than Schools of Medicine, of Dentistry, or Osteopathy and of Public Health.

Special mention should be made of the Health Sciences Advancement Awards, two of which have been approved recently on a pilot basis, one to Cornell University in Ithaca and one to the University of Virginia. These grants are designed to establish new centers of excellence and strength in institutions which have demonstrated the potential, but which have not yet developed their programs to the point that they can compete strongly on a national scale. It is desirable that competitive development grants of this kind be open to other institutions throughout the country, in order to increase our national capacity in science and to broaden its geographic base. As I see the need, thirteen millions will be needed for this program.

These three items sum to make the total of \$72,100,000 mentioned at the beginning of this section of my testimony.

Mention must also be made of the inadequacy of the President's budget with respect to Direct Operations of the Division of Research Facilities and Resources. The figure in the budget is \$4,298,000, whereas actually \$5,410,000 is needed. The administrative staff of the Division is shorthanded, and, within the budget, can scarcely negotiate and manage the contracts, review and administer the grants, and carry out the program planning and analysis which sound government practice requires. The Division should have the funds which will permit it to strengthen its staff with well-qualified persons in adequate numbers so that its administrative functions can be carried out promptly and thoroughly without overworking its dedicated staff or spreading it too thin. The recent Ruina report stresses the importance of strengthening the capability of the Public Health Service in contract management. It cannot meet the tasks without adequate funds for Direct Operations.

In concluding my formal, prepared testimony, let me stress that the cold dollar figures cited have profound human meaning. I have mentioned that almost every family in the country has members now alive and well whose presence could not be expected except for the results of medical research. Some of these people have been dramatically saved from threatening death, as have my son and daughter, but others—like those who took polio vaccine—have just never gotten sick with the disease in question. But many have been lost because the results of research came too late to save them. I remember a patient of mine thirty years ago when I was on the house staff of the Johns Hopkins Hospital. He had a serious staphylococcus infection. We tried the first of the sulfa drugs, which were then just becoming available. Though he was one of the first to receive the drug, and though the drug saved some of his fellow patients, his illness did not respond, and he was lost to his family and to us. He was a fine, promising boy, who had much to give to his country. I still reflect on the grief of his family, on my helplessness which the best medicines available, and on the much greater hope we could have offered him, had his illness occurred a few years later, when antibiotics effective against his organism were available.

Today, still, many are threatened with diseases for which research may provide effective answers in the future, but which cannot now be managed in a very satisfactory way. Some will succumb before research provides the knowledge necessary for prevention, cure or palliation, but many can be saved if our research is strengthened, supported and expanded adequately. It is because of my concern for these people and for their families that I have brought my thoughts and my judgments before this distinguished group. I urge that you work for the enactment of this citizen's budget, for the funds thus flowing into research will raise the number of our fellow citizens whose lives will be prolonged and whose families will be rejoiced because the research was not too late for them.

Distinguished Senators, I thank you again for the opportunity of presenting my views.

H. STANLEY BENNETT, M.D.

SIGNIFICANCE OF MEDICAL RESEARCH

Dr. BENNETT. The basic reason, Senator Hill, is that the pace at which our medical research goes forth has very real human significance. It has bearing on the lives and health of the people of this country. If it slows down, then we are going to lose people, and I can sort of

cite this by mentioning the experiences of one ordinary American family and just a few events that have happened in my own life will illustrate this point.

I have a daughter for example—I will show you her picture, Senator, with our grandson. I have three grandchildren. When she was a young girl of 5 or 6 she had a very serious and rapidly developing infection around her face—streptococcus infection.

Senator HILL. No signs of it now. She is a beautiful lady.

Dr. BENNETT. It was an alarmingly, rapidly developing affair that physicians fear and we took her into the hospital immediately. Penicillin had just come along and this infection responded dramatically to this and she was saved. I would have feared if she had had this same illness a few years earlier or if Harold Florey and Alexander Fleming had been later in coming along with penicillin, we would have lost her and would not have had this fine grandson.

My son, also whose picture is here, his life was saved, in this case by a different mechanism. He had a serious condition in infancy which the advances of surgery were able to correct and now he is a very fine, healthy boy studying geophysics.

We look forward and hope he will be a good scientist who will contribute to his country in many ways.

So here are examples of youngsters whose lives were saved because research came in time.

I think, for example, of these two grandchildren and look at their prospects. They will probably go through life without any fear of polio and their mothers and fathers will never think of it, not realizing that the research which was carried out in the past has pretty much removed this fear and danger from them.

Senator HILL. From the evidence we had this morning they won't have to worry about measles either.

Dr. BENNETT. We hope this is true. These are examples of people whose lives have been saved and made safer because research came in time.

In my experience as a physician, I know of individuals whom we have lost or who have been crippled or whose health has been impaired seriously because the research did not come in time.

The pace of our research which is threatened by the current slowdown in the rate of increase of our research budget worries me very much because its impact on the people of this country means suffering, and it means less strength for our physicians in treating the ill and in preventing disease, than you and I would like to see.

So I feel most earnest in my testimony, Senator Hill, in my hope that you and your colleagues who see this overall pattern will not permit the other urgent demands on our tax money to impede the progress of this work.

Senator HILL. This would make it a war on disease.

MALARIA

Dr. BENNETT. We lose more people from disease than we do from war and we need the conquest of disease for the people who are in war; the troops with malaria which is affecting our soldiers in Vietnam, for example.

Senator HILL. That has been quite a problem out there.

Dr. BENNETT. Here is a case where my own institution, the University of Chicago has carried out distinguished work with malaria. If it were not for the work done in Chicago by the malaria group which Dr. Alving headed for many years, and which Dr. Poley now heads, we would not be where we are. We would not be maintaining our soldiers as well as we are.

The fact that it is handled as well as it is is the result of research that has already been done. The fact is, it is not perfect. We still have problems and still have instances of disease and we have an interesting recurrent malaria problem in this country, among the people who brought the disease with them.

So our own doctors have had to refamiliarize themselves with this condition as a reflection of the need for further research in this field.

Senator HILL. Dr Coggeshall has retired, hasn't he?

Dr. BENNETT. He has retired and lives in your State. He was my predecessor as dean of the University of Chicago. I followed him there and was pleased to have his help.

Senator, I think this gives the general setting of my viewpoint. The specific details which pertain to the items of the budget with which I have specific concern and knowledge are outlined in my prepared testimony. Perhaps this would be sufficient for this occasion.

Senator HILL. It has been fine to have you here. We deeply appreciate it.

GENERAL MEDICAL SCIENCE

STATEMENT OF DR. EMANUEL M. PAPPER, PROFESSOR AND CHAIRMAN, DEPARTMENT OF ANESTHESIOLOGY, COLLEGE OF PHYSICIANS & SURGEONS, COLUMBIA, AND DR. JONATHAN E. RHOADS, PROFESSOR AND CHAIRMAN, DEPARTMENT OF SURGERY, SCHOOL OF MEDICINE, UNIVERSITY OF PENNSYLVANIA

TRAINING SCIENTISTS FOR RESEARCH CAREERS

Senator HILL. Drs. Papper and Rhoads.

Dr. RHOADS. I am a Philadelphia surgeon trained by Dr. I. S. Ravdin at the hospital of the University of Pennsylvania where I succeeded him in 1959 and chairman of the department of surgery and director of the Harrison Department of Surgical Research.

After 4 years' service on the surgery study section at the National Institutes of Health, I served on the group reviewing applications for clinical research centers supported by the then Division of General Medical Sciences and became a member of the National Advisory Council on the General Medical Sciences when this arm of the National Institutes of Health became an institute in 1963.

As a clinical surgeon with a strong interest in research, I have had a unique opportunity to watch the growth and fruition of programs in research and research training in the basic sciences and their impact in the clinical fields directly affecting patients.

Today, I wish to speak primarily about training scientists for research careers in those fields which give promise of saving lives and relieving patients who suffer.

MEDICAL FELLOWSHIP COMMITTEE

A number of years later, I succeeded the late Dr. Alfred Blalock as the surgical member of the Medical Fellowship Committee of the National Research Council. With Rockefeller Foundation financing, this organization carried through the first sizable program in research training.

Later, I participated in a broad study of research training among hospital residents headed by Dr. Arthur Cain and, still later, served as a member of the Fellowship Committee of the American Cancer Society and for 2 years as its chairman.

These positions have afforded me an extensive opportunity to observe the development of these programs and, what is more important, the development of some of the young men who have been developed by them.

It may be of interest to you to know that Dr. Stanley Bennett who just testified was one of those who held that fellowship.

TRAINING SUPPORT OF SCIENTISTS

As you know, the National Institute of General Medical Sciences has provided the largest number of training opportunities among the Institutes of Health and, at its maximum, about 1963, supported approximately 6,400 young scientists.

The number has been declining since that date because the appropriations for training grants have been so nearly level during a period of rising costs that the recent appropriations, even though slightly larger than in preceding years, could not support as many trainees.

SCOPE OF INSTITUTE

At this point, I should like to emphasize the tremendous scope of the National Institute of General Medical Sciences.

Anything that is "general" is not very "particular" and the name General Medical Sciences does not give one much of a handle on the activity or the importance of this Institute. To put this in focus, let me cite an analogy. Most medical schools are divided roughly in half between the preclinical sciences—anatomy, biochemistry, physiology, pharmacology, microbiology, and pathology on the one hand and the clinical branches on the other. About equal time in the curriculum is given to each.

Basically, the General Medical Sciences Institute represents and supports the entire preclinical area while the other eight Institutes represent most of the facets of the clinical subjects plus dental medicine.

In addition, certain important fields in the clinical area have been assigned to the General Medical Sciences Institute under the phrase in the act which gives it responsibility for areas of interest which lie between, or cross over, lines separating the categorical Institutes.

Thus, from a time several years before General Medical Sciences became an Institute, it supported research and research training in surgery, radiology, and anesthesiology. More recently, biomedical engineering has been assigned to this Institute.

The late Mr. Fogarty made the remark that the program of the NIGMS lacked "sex appeal" and that it was not easy to convince some

of his fellow Members in the Congress of its importance. Its importance is exemplified in the following illustrations.

We all know that the basic experiments of Pasteur made it possible for Lister to make surgery safe for democracy and at the same time laid the basis for many of our public health programs in the prevention of infectious disease.

PENICILLIN

We have already had a reference to the antibiotics and the development of penicillin.

Senator HILL. "The Magic Gold." Do you have a copy of that book?

Dr. RHOADS. No, I don't think I have seen that, "The Magic Gold."

Senator HILL. It is a good book. It tells the story of penicillin, the magic gold.

I think I mentioned it tells a lot about boys brought back during World War II with wounds of many kinds, and how there in those hospitals all they had was hope. Everything they tried had failed up to this time until they got this magic gold, penicillin, and that brought the answer.

Dr. RHOADS. It certainly turned night into day for a host of people a few years later.

Senator HILL. Do you recall where we had to make it during the war?

Dr. RHOADS. Merck.

Senator HILL. We made it in a veterinary laboratory in Illinois.

Dr. RHOADS. It was really brought into production here.

Senator HILL. Largely so, yes.

STREPTOMYCIN

Dr. RHOADS. The practical importance of basic research came to me very personally. About 1943, Dr. Selman A. Waksman, working on earth microorganisms at Rutgers, reported a new antibacterial substance, streptomycin. We had some of the early batches of this material and tested its effectiveness in many surgical infections at the hospital of the University of Pennsylvania.

A bit later, it was shown to have a very beneficial effect in tuberculosis. When in 1946 the USPHS did me the great service of finding that I had active tuberculosis, I first tried the conventional rest cure but after several months of no improvement, I had streptomycin and rapidly recovered. Thus, I can say that I personally owe my health and perhaps my life to basic research.

This is the kind of work which the National Institute of General Medical Sciences now supports.

When William Mosler and some others founded the National Tuberculosis Association it was the No. 1 killer in the United States.

RECOMMENDED APPROPRIATION

Last year the President's budget for NIGMS was only \$135 million. I testified in favor of an amount of \$160 million. Thanks to the Congress, the final appropriation was \$145 million, and I am glad to see that the President's recommendation this year exceeds \$160 million.

I am still not satisfied and am recommending a figure of \$185,500,000 plus an addition of approximately \$15 million if the war in Asia should end or be greatly deescalated.

In research the President's budget calls for nearly a 15 percent rise and this is good. It is estimated that scientifically approved research projects within the area of responsibility of this Institute will exceed this allowance by \$30 million and, I believe, at an absolute minimum, one-third of these should be funded.

Should a further increase in this category not be possible, it would be helpful if an amount up to \$5 million could be spent either by the grant or the contract mechanism for research in instrumentation, automated clinical laboratory facilities and automated patient information studies.

This provision would not add to the total and it is thought certain things could be handled more efficiently by the contract mechanism.

RESEARCH TRAINING

In the area of research training, I believe the President's budget proposal is unrealistic. Here it recommends less than a 5-percent increase. It must be borne in mind that we are experiencing a gradual but pervasive inflation and that in addition, research operations are facing a steady increase in the complexity and cost in the equipment required.

DECREASE IN TRAINING GRANTS

The result of these trends has been that the number of training grants has been decreased and the number of people for whom training is provided has decreased in each of the last 2 years, despite small increases in the funds made available.

A further decrease is foreshadowed in the President's budget for 1967-68. This decrease for the 3 years is estimated at 800 less people.

Is this bad? I think it is bad because the number of scientists trained today limits what we can do for a good many tomorrows. Scientific endeavor requires money for current expense. It requires equipment, it requires buildings, and it requires people—people who have become expert in many different fields.

The lag time on these four categories is very different. The current expense can be funded immediately by signing a check and its conversion into most supplies is rapid.

The larger items of equipment often require 2 to 8 months for delivery. The buildings require 1½ to 3 years if one includes planning as well as construction. The personnel, however, takes longer.

From college on through medical school, internship, and residency, 9 years is usual and, in most instances, 2 years is added for national service.

For those in the Ph. D. programs, the requirement is shorter but probably averages 4 years to the Ph. D. and 2 years of postdoctoral fellowship plus national service when required.

If the war in Vietnam ends, or even if it is substantially reduced in size, the Nation should certainly step up its attack on our common problems at home. Surely among the most urgent are disease, injury, and disability.

Therefore it behooves us to maintain our supply and advance our production of scientific manpower so that we will have full capability 3, 5 and 8 years ahead.

TRAUMA RESEARCH

I have included in my testimony a number of other items. I think we should fund trauma research more extensively than in the past. I think it is funded to about the extent of \$6 million a year. Yet it is collectively the fourth largest cause of death and the largest between five and 35 years of age, and we see it every day.

Finally, I would like to record short statements on two other subjects not immediately related to NIGMS though indirectly, they are strongly, related to it.

NATIONAL LIBRARY OF MEDICINE

The first of these is the National Library of Medicine. Libraries are the reservoirs or, if you will, the banks of human knowledge. The National Library of Medicine's extramural program has been authorized but thus far funding has been grossly inadequate. Certainly enough money should be put into it to implement the regional libraries program and to make a start on better means of data retrieval at the local level.

Senator HILL. How much would you suggest, Doctor?

Dr. RHODES. I would suggest a figure of perhaps \$2 million additional and it would have to go up subsequently.

CLINICAL RESEARCH CENTERS

The second subject is the clinical research center. These were set up with the understanding that 85 percent of the bedspace would be paid for by the Government even though occupancy might be lower. I understand that accounting principles have led to reconsideration of this plan and that many of the institutions which entered into these centers may be called upon to repay rather large sums retroactively.

Because of the importance of these clinical research centers for the extramural programs of many of the Institutes of Health and the importance of maintaining the faith of the institutions in Government sponsorship of research. I hope that a way can be found through additional legislation to relieve the institutions of this retroactive cost.

PROPOSED BUDGET

In summary, I am proposing a regular budget of \$183 million plus a special line item of \$2,500,000 for basic research in trauma.

If, in the wisdom of the Senate, the stresses on the Federal budget including the Vietnam war preclude a major increment in the program of the General Medical Sciences Institute beyond that proposed in the President's budget and approved by the House of Representatives, I believe that an addition for training grants both of the regular variety and of the special variety inaugurated in anesthesiology would be the most important of all areas to increase.

As stated previously, these programs have been significantly curtailed by the interaction of nearly level appropriations and a rising

scale of cost due to the general increase in prices and salaries through the country.

It is in the preparation of well-trained scientists that a deficit will be most keenly felt in the years ahead when the Nation will want to expand its research program in the biomedical sciences and when, even though ample money is available, a deficit in well-trained minds cannot quickly be made up.

Paraphrasing a statement the late Alfred Newton Richards made, I believe at the time when he was Chairman of the Committee on Medical Research under Vannevar Bush, he said, "a bull cannot beget a calf in 1 month by making nine cows pregnant." A relatively small increase now to bring the training programs up to parity in terms of the number of people trained should not only prepare us for an important expansion of the effort to improve the health of the Nation through research when additional funds are released for this purpose, but the men and women so trained should effect a great saving in money as well as in time in using the added resources intelligently in the 1970-80 decade.

Thank you again for the privilege of presenting the case for a national program more adequate for the support of basic medical science. In my judgment, anything less would not be commensurate with its great potential in improving the quality of health as well as our longevity.

PREPARED STATEMENT

Senator HILL. You always bring us a fine statement and I want this statement to appear in full in the record. We appreciate it very much. (The statement follows:)

Thank you again for the privilege of appearing before you in support of the program of the National Institute of General Medical Sciences.

I am a Philadelphia surgeon trained by Dr. I. S. Ravdin at the Hospital of the University of Pennsylvania where I succeeded him in 1959 as Chairman of the Department of Surgery and Director of the Harrison Department of Surgical Research. After four years' service on the Surgery Study Section at the National Institutes of Health, I served on the group reviewing applications for clinical research centers supported by the Division of General Medical Sciences and became a member of the National Advisory Council on the General Medical Sciences when this arm of the National Institutes of Health became an institute in 1963.

As a clinical surgeon with a strong interest in research, I have had a unique opportunity to watch the growth and fruition of programs in research and research training in the basic sciences and their impact in the clinical fields directly affecting patients. Today, I wish to speak primarily about training scientists for research careers in those fields which give promise of saving lives and relieving patients who suffer.

My interest in research training began during medical school when I devoted two of the three summers available to medical research. Of the five years I spent with Dr. I. S. Ravdin as a Surgical Fellow, approximately one third was devoted to research and graduate study for which the degree of Doctor of Medical Science was awarded me by the University of Pennsylvania.

A number of years later, I succeeded the late Dr. Alfred Blalock as the surgical member of the Medical Fellowship Committee of the National Research Council. With Rockefeller Foundation financing, this organization carried through the first sizable programs in research training. Later, I participated in a broad study of research training among hospital residents headed by Dr. Arthur Cain and, still later, served as a member of the Fellowship Committee of the American Cancer Society and for two years as its Chairman.

These positions have afforded me an extensive opportunity to observe the development of these programs and, what is more important, the development of

some of the young men who have been developed by them. As you know, the National Institute of General Medical Sciences has provided the largest number of training opportunities among the Institutes of Health and, at its maximum, about 1963, supported approximately 6,400 young scientists. The number has been declining since that date because the appropriations for training grants have been so nearly level during a period of rising costs that the recent appropriations, even though slightly larger than in preceding years, could not support as many trainees.

At this point, I should like to emphasize the tremendous scope of the National Institute of General Medical Sciences.

Anything that is "general" is not very "particular" and the name General Medical Sciences does not give one much of a handle on the activity or the importance of this Institute. To put this in focus, let me cite an analogy. Most medical schools are divided roughly in half between the preclinical sciences— anatomy, biochemistry, physiology, pharmacology, microbiology and pathology on the one hand and the clinical branches on the other. About equal time in the curriculum is given to each.

Basically, the General Medical Sciences Institute represents and supports the entire preclinical area while the other eight Institutes represent most of the facets of the clinical subjects plus dental medicine.

In addition, certain important fields in the clinical area have been assigned to the General Medical Sciences Institute under the phrase in the Act which gives it responsibility for areas of interest which lie between or cross over lines separating the categorical Institutes. Thus, from a time several years before General Medical Sciences became an Institute, it supported research and research training in Surgery, Radiology and Anesthesiology. More recently, biomedical engineering has been assigned to this Institute.

The late Mr. Fogarty made the remark that the program of the NIGMS lacked "sex appeal" and that it was not easy to convince some of his fellow members in the Congress of its importance. Its importance is exemplified in the following illustrations.

We all know that the basic experiments of Pasteur made it possible for Lister to make Surgery safe for democracy and at the same time laid the basis for many of our public health programs in the prevention of infectious disease. We know that Fleming's observation that a mold killed a growth of bacteria gave us penicillin, but we get discouraged because the last 100 research grants in basic sciences may not have yet given us anything immediately applicable. We forget the time lag that separated these earlier discoveries from full application and we forget that many obscure investigations, often understandable to only a limited group of experts working in the same or related fields, usually precede and follow great discoveries.

The practical importance of basic research came to me very personally. About 1943 Dr. Selman A. Waksman, working on earth micro-organisms at Rutgers, reported a new antibacterial substance, streptomycin. We had some of the early batches of this material and tested its effectiveness in many surgical infections at the Hospital of the University of Pennsylvania. A bit later, it was shown to have a very beneficial effect in tuberculosis. When in 1946 the USPHS did me the great service of finding that I had active tuberculosis. I first tried the conventional rest cure but after several months of no improvement, I had streptomycin and rapidly recovered. Thus, I can say that I personally owe my health and perhaps my life to basic research.

This is the kind of work which the National Institute of General Medical Sciences now supports.

Just looking at the small segment of surgical research from our own department at the University of Pennsylvania, I would single out the following as having immediate potentiality for the saving of lives or the relief of disabling symptoms. Three examples will suffice to show that all of these rest heavily on basic research.

First, I would pick out the demonstration carried out jointly with our Department of Medicine that ultrasound waves can be used to make an early diagnosis of pulmonary embolism, that is of a clot in the lung. This will, we believe, permit the emergency removal of many such clots which have so often been fatal. This development rests on extensive research in the field of ultrasound and ultrasound reflection.

Second, the demonstration in another project, carried out mainly in the Department of Obstetrics and Gynecology by Drs. Green, Smith, Kyle, Touchstone and Duhring with assistance from the Departments of Medicine and Surgery,

showed that many babies of diabetic mothers could be saved by measurement of the urinary estriol excretions during the latter stages of pregnancy. When this falls below four milligrams per 24 hours after the 33rd week of gestation, fetal death is so frequent that it should be considered an indication for the termination of pregnancy. This rests clearly on the basic biochemical research on the steroids and was made possible in great measure by the expert work of Dr. Joseph Touchstone who is a steroid chemist on the staffs of the Departments of Obstetrics and Gynecology and Surgery.

The third example is the paper by Drs. Peskin and Miller on the use of serotonin antagonists in the postgastrectomy syndrome. Specifically, this refers to the use of the drug for individuals who have weak spells and sometimes diarrhea after operations for ulcer or cancer of the stomach. As this paper sets forth very clearly, the rationale of using the new drugs such as Sansert, rests on most extensive studies of the physiology of the digestive tract.

Perhaps these three examples selected from my own university, each representing critical help for a small category of patients and each resting on a clear background of basic scientific work, will help in the evaluation of this national program in the general medical sciences.

Medical research is a speculation—it is as much a speculation as that which attracted thousands of people to California in 1849 and to the Klondike in 1898, yet it is different. The goals are infinitely more valuable and their benefits are for all—not just for the discoverer or the man who stakes out the claim.

Last year the President's budget for NIGMS was only \$135,000,000. I testified in favor of an amount over \$160,000,000. Thanks to the Congress, the final appropriation was \$146,000,000, and I am glad to see that the President's recommendation this year exceeds \$160,000,000. I am still not satisfied and am recommending a figure of \$185,500,000 plus an addition of approximately \$15,000,000 if the war in Asia should end or be greatly deescalated.

In research the President's budget calls for nearly a 15% rise and this is good, but it is estimated that scientifically approved research projects within the area of responsibility of this Institute will exceed this allowance by \$30,000,000 and, I believe, at an absolute minimum, one-third of these should be funded. These projects represent much thought, they have received careful study by experts in the field and have the approval of peer groups—persons outside of regular government employment. Nearly all of them are backed equally by staff, and there is no one who can say what is missed or lost by our failure to support them. In each case the institution applying is proffering a contribution of its own scarce funds for the work. Should a further increase in this category not be possible, it would be helpful if an amount up to \$5,000,000 could be spent either by the grant or the contract mechanism for research in instrumentation, automated clinical laboratory facilities and automated patient information studies.

In the area of research training, I believe the President's budget proposal is unrealistic. Here it recommends less than a 5% increase. It must be borne in mind that we are experiencing a gradual but pervasive inflation and that in addition, research operations are facing a steady increase in the complexity and cost in the equipment required. The result of these trends has been that the number of training grants has been decreased and the number of people for whom training is provided has decreased in each of the last two years, despite small increases in the funds made available. A further decrease is foreshadowed in the President's budget for 1967-68. This decrease for the three years is estimated at 800 less people.

Is this bad? I think it is bad because the number of scientists trained today limits what we can do for a good many tomorrows. Scientific endeavour requires money for current expense. It requires equipment, it requires buildings, and it requires people—people who have become expert in many different fields.

The lag time on these four categories is very different. The current expense can be funded immediately by signing a check and its conversion into most supplies is rapid. The larger items of equipment often require two to eight months for delivery. The buildings require one and a half to three years if one includes planning as well as construction. The personnel, however, takes longer. From college on through medical school, internship, and residency, nine years is usual and, in most instances, two years is added for national service. For those in the Ph.D. programs, the requirement is shorter but probably averages four years to the Ph.D. and two years of post doctoral fellowship plus national service when required.

If the war in Vietnam ends or even if it is substantially reduced in size, the nation should certainly step up its attack on our common problems at home. Surely among the most urgent are disease, injury and disability. Therefore, it behooves us to maintain our supply and advance our production of scientific manpower so that we will have full capability three, five and eight years ahead.

The fellowship program falls in almost the same category. The President recommends approximately an 8% increase and this is estimated to provide for about 200 fewer trainees than in the earlier fiscal year.

Turning to special categories, the program in pharmacology and toxicology is forging ahead and will need some additional support. The anesthesiology and diagnostic radiology centers are important programs and should be expanded in accordance with the President's budget, one half to one million, and better to 1.3 million dollars.

There is an important field of public health which has received only token attention and this is the field of trauma, especially injuries which are the result of highway accidents. Trauma which includes burns, falls, war injuries, etc. is our fourth largest cause of death—after heart disease, cancer and stroke. Between the ages of five and thirty-five, it is the largest cause of death. Yet, a recent study indicated that only about \$6,000,000 of federal money was going into research grants in this field.

Contrary to what one might suppose, the Armed Forces casualties are but the minority of those sustained. Furthermore, in most years the Armed Forces sustain many more casualties from accidents than from enemy action. For these reasons and others, basic research in trauma has not been looked upon as the peculiar responsibility of the Armed Forces and has not been funded adequately through this channel.

There is much to be learned about its treatment, about shock and what factors make shock irreversible. There are mysterious or at best poorly understood cases in which a limb is crushed and sometime afterwards the kidney shut down and stop working. There are other delayed deaths from fat embolism in which it is thought that fat in the bone marrow gets forced into the circulation and clogs the fine capillary vessels in the lung and elsewhere.

The National Institute of General Medical Sciences called a conference on this subject last year, and it appeared to those present that the key problems would only be solved by the application of basic science research from several disciplines. It would appear, therefore, that the General Medical Sciences Institute was the logical place to sponsor it—except for head trauma which is being investigated by the Institute of Neurological Diseases and Blindness.

I would strongly urge a line item of \$2,500,000 to enable the Institute to begin the development of its pilot program in this area into a broad attack. Eventually, the cost will be proportionate to the importance of the field, but the sum should suffice for the fiscal year 1968 because of limitations of available manpower.

Finally, I would like to record short statements on two other subjects not immediately related to NIGMS though indirectly, they are strongly related to it.

The first of these is the National Library of Medicine. Libraries are the reservoirs or, if you will, the banks of human knowledge. The National Library of Medicine's extramural program has been authorized but thus far funding has been grossly inadequate. Certainly enough money should be put into it to implement the regional libraries program and to make a start on better means of data retrieval at the local level.

The second subject is the Clinical Research Centers. These were set up with the understanding that 85% of the bed space would be paid for by the government even though occupancy might be lower. I understand that accounting principles have led to reconsideration of this plan and that many of the institutions which entered into these Centers may be called upon to pay rather large sums retroactively. Because of the importance of these Clinical Research Centers for the extramural programs of many of the Institutes of Health and the importance of maintaining the faith of the institutions in government sponsorship of research, I hope that a way can be found through additional legislation to relieve the institutions of this retroactive cost.

In summary, I am proposing a regular budget of \$183,000,000 plus a special line item of \$2,500,000 for basic research in trauma.

If, in the wisdom of the Senate, the stresses on the Federal budget including the Vietnam war preclude a major increment in the program of the General Medical Sciences Institute beyond that proposed in the President's budget and approved by the House of Representatives, I believe that an addition for training

grants both of the regular variety and of the special variety inaugurated in anesthesiology would be the most important of all areas to increase. As stated previously, these programs have been significantly curtailed by the interaction of nearly level appropriations and a rising scale of cost due to the general increase in prices and salaries throughout the Country. It is in the preparation of well-trained scientists that a deficit will be most keenly felt in the years ahead when the nation will want to expand its research program in the biomedical sciences and when, even though ample money is available, a deficit in well-trained minds cannot quickly be made up.

Paraphrasing a statement the late Alfred Newton Richards made, I believe, at the time when he was Chairman of the Committee on Medical Research under Vannevar Bush, a bull cannot beget a calf in one month by making nine cows pregnant. A relatively small increase now to bring the training programs up to parity in terms of the number of people trained should not only prepare us for an important expansion of the effort to improve the health of the nation through research when additional funds are released for this purpose, but the men and women so trained should effect a great saving in money as well as in time in using the added resources intelligently in the 1970-1980 decade.

Thank you again for the privilege of presenting the case for a national program more adequate for the support of basic medical science. In my judgment, anything less would not be commensurate with its great potential in improving the quality of health as well as our longevity.

NATIONAL INSTITUTES OF HEALTH

National Institute of General Medical Sciences citizen's budget for fiscal year 1968

	1967, fiscal year	President's budget	Recom- mendation, J. E. Rhoads
Research grants.....	\$71,172,000	\$80,763,000	\$91,700,000
Pharmacology-toxicology research centers.....	3,500,000	3,500,000	4,000,000
Anesthesiology and diagnostic radiology centers.....	500,000	1,000,000	1,300,000
Center for research in trauma.....			2,500,000
Subtotal, research grants.....	75,172,000	85,263,000	99,500,000
Fellowships.....	19,400,000	20,910,000	23,000,000
Training.....	43,735,000	45,729,000	53,500,000
Direct operations.....	7,724,000	8,382,000	9,500,000
Total.....	146,031,000	160,284,000	185,500,000

STATEMENT OF DR. PAPPER

PREPARED STATEMENT

Senator HILL. Now, Dr. Papper.

Dr. PAPPER. Thank you. It is a great privilege to be allowed to talk to you in support of the National Institute of General Medical Sciences. I have a prepared statement which is in your possession and would appreciate having it appear in the record.

Senator HILL. It will appear in the record in its entirety.

(The statements follow:)

I should like to thank you for the privilege of appearing before this Committee to speak in behalf of the programs of the National Institute of General Medical Sciences. At the outset, I wish to express my good wishes to Chairman Hill and to the members of this distinguished Committee which has done so much to improve the quality and to increase the availability of medical care in this country.

My knowledge of the Institute of General Medical Sciences dates back to the time when it was a Division of the National Institutes of Health. I have known the Institute as a grantee and as a consultant. Just about a year ago, I completed a six-month's tour of duty with the Institute in Washington. During that time,

my office was next to Dr. Frederick L. Stone's, the director, and I assure you that I became very well acquainted with the Institute's programs and problems, not merely the anesthesiology program which was my prime responsibility at the time, but with other programs Dr. Stone was giving special emphasis to at that time.

Today I would like to talk to you about four of these programs which I think should be brought to your attention: one program because of the serious problem confronting it, two others because of their great biomedical potential, and the fourth because it is of particular concern to me and because it is always gratifying to report good tidings.

The first program I wish to discuss is the Institute's training program. This program trains thousands of young men and women who are working toward the Ph. D. degree in the health sciences or those who have already received doctoral degrees and are being trained for biomedical research.

The purpose of this program is to develop a corps of young men and women who are well trained in one or more of the major biomedical sciences. It is through these young scientists that the quality of research in this country will be improved and expanded.

This training program also improves the intellectual and physical environment in which the research training takes place. The grants provide funds for additional teaching staff and for equipment, laboratory animals, and other essentials in the conduct of research.

Different from the research project grant which generally is expected to produce information within a fairly well-defined period, the training grant is in a *time sense* open-ended. A training program that continues to meet the high standards and conditions set forth in the grant is renewed every five years, the average time for training a Ph. D. Until recently, the directors of these programs have felt a sense of stability about their training programs that has contributed to their excellence; now there is doubt.

The Institute's training program supports more than half the young people who are working toward Ph. D.'s in basic health sciences. This responsibility the Institute has carried out with striking success. But for the past four years the program has been jeopardized by a steady decrease in the number of people due to the lack of appropriations to train them.

This decrease seems at odds with the administration's emphasis on alleviating shortages in the health professions. Now in another Bureau, for Health Manpower Educational Services, the 1968 budget shows an increase of \$36,270,000 in training grants, a 70 percent increase over the previous year. This increase indicates a practical understanding of the very long-term solution to much of the non-medical manpower shortage. But there has not been a similar understanding in regard to the research training programs of the National Institutes of Health which, while they are training the biomedical scientists, are also preparing these young scientists as the teachers of the health professionals. Especially is this the case with the academically oriented physicians who have received research training which qualifies them for careers in academic medicine—patient care, teaching, and research.

In the current year, the Institute is supporting about 620 training programs. There are about 4,850 young people working for their Ph. D. degrees and some 1,070 trainees who have already received their Ph. D., M.D. or other doctoral degree. A significant number of the research M.D.'s are anesthesiologists, radiologists, surgeons, and pathologists.

This figure of trainees may seem sizable, but I should like to give you some comparative figures to indicate what is happening to this program which is the keystone of basic health science training for all the research programs of the National Institutes of Health.

Last Fiscal Year (1966), there were 6,500 trainees supported through the Institute's program. This year, there are 5,920. The proposed 1968 budget will bring about another cut, making the total number about 5,700. The reduction in the number of trainees is not apparent from a cursory glance at the budget figures for each of the three years I have mentioned. Those figures are consecutively: \$41 million, \$42 million, and \$44 million.

For Fiscal Year 1967 the increase is 3.2 percent and for Fiscal year 1968, 4.6 percent. The point is, that to maintain the programs at current levels, the increase must be at least 8 percent a year. Let me give you a few reasons for this besides the obvious one of the general rise in the cost of living.

The costs of training increase as the number of trainees increase each year in all of these programs. That is, a program may start with three trainees the first year. The next year, to those original three, another three will be added, and so on, until the fourth year when the total will be twelve trainees in the program. The more trainees, the more equipment will be needed. In those four years, it is likely that some who were not married when they began the training get married before the end of the training and some have children. For these dependents, there are special allowances.

One item that increases the cost of biomedical research training and one that is just now being felt is the rise in the cost of laboratory animals and animal care as a result of recent legislation. One training program director recently requested an additional \$2,000 to meet the increased cost of research animals used in the research projects that are part of the training program.

It would be unfortunate indeed if this superb training effort of the National Institute of General Medical Sciences continues to be systematically dismantled by insufficient funds. We could very well find ourselves in the same regrettable position that all of science was in during the 1950's in this country when young people were trained for "yesterday's research." Modern techniques and instruments alone require highly specialized training over and above the learning of a particular area of science itself. This is not the time to cut down on biomedical research training, but rather the time to support it strongly.

And now I should like to discuss two programs that, by their positions at the extremes of biomedical research, indicate the breadth of the Institute's responsibility. The first of these is genetics, once considered an esoteric subject having little or no relation to the practice of medicine. Within the past decade, however, genetics has emerged as a major biomedical science. About 300,000 babies born each year in this country have some sort of genetic handicap. One out of every four human embryos carries a genetic defect or later develops a clinically recognized symptom arising from an altered genetic situation.

One of the most widely known genetic defects that can be predicted is in the Rh factor. Until some twenty or so years ago, most babies born of parents with this blood incompatibility died. Now it is possible to diagnose and treat this disease as a direct result of apparently unrelated basic research.

During the past year, geneticists established the linkage between several syndromes and chromosomal aberrations. One of these syndromes is characterized by mental retardation, impaired hearing, and abnormal facial development. Another aberration was related to the "cat-eye" syndrome which manifests itself in a vertical coloboma of the iris, resembling the pupils of a cat. Not so long ago, the genetic relationship was established for Down's syndrome, or mongolism, as it is commonly called. Prenatal tests are now possible for forecasting genetically related aberrations.

Last September, the Institute of General Medical Sciences brought together some of the world's most renowned geneticists, among them, Dr. Widukind Lenz of Germany who first established the fact that thalidomide damaged the foetus, his findings resulting in that drug being removed from the German market; Dr. Jerome Lejeune of France who identified Down's syndrome as a genetic defect; and Dr. Victor A. McKusick of Johns Hopkins University who this past year published a book in which he listed some 500 diseases and disabilities that have been linked to genetic factors. These and other distinguished geneticists discussed the major areas that needed support and made recommendations to the Institute.

As a result of their recommendations, the Institute has vastly encouraged increased activity in human genetics research. To assist in this research, the Institute has contracted with Oak Ridge National Laboratory for studies of methods of producing the biological materials needed for genetics research in the purest form obtainable in the world.

This genetics program of the Institute, if strongly supported, will contribute significantly to diagnostic and preventive medicine as well as to treatment. Clinical genetics is of vital interest to physicians who today are called upon for genetics counseling by their patients. Tests have already been developed for detecting genetic defects in prospective parents, and enable physicians to predict certain anomalies that could cause death or disability in children or for detecting possible abnormalities in the early stages of pregnancy. The entire field of clinical genetics, including these tests, is one that should be vigorously developed and supported. Without a doubt, genetics is a science from which we can expect some of the truly exciting advances in medicine.

From genetics, I should like to go to the subject of automating clinical laboratories. About the turn of the century, the family doctor tested urine by shaking the bottle, looking for yellow foam to detect bile, and tasting the urine to detect sugar. By 1920, only four quantitative chemical tests—for sugar, urea, creatinine, and chloride—could be carried out routinely on body fluids.

The modern clinical chemistry laboratory today may be called upon to perform any of 50 to 100 different types of analyses and even that many may be inadequate to give the physician the information he needs for correct diagnosis or treatment. Close to a billion clinical diagnostic tests are performed annually. In 1965, Veterans Administration hospitals alone performed 44 million tests.

Not only the number but the variety of tests has increased enormously. Whereas at one time a few tests might be ordered by the physician when a patient enters the hospital, now it is fairly common to order batteries of tests. A few years ago the average laboratory could perform some eight to ten chemical tests on blood or other body constituents. Today dozens of tests involving complicated techniques and highly specialized instruments are routinely carried out for the proper diagnosis of coronary heart disease, endocrine malfunction, and various metabolic disorders.

The quality in performance in clinical chemistry laboratories is far below acceptable levels in many hospitals. There are no universal standards of comparison of the normal and the sick individual in terms of specific tests.

So great is the present disparity in the quality of laboratory tests that a man with diabetes, for example, could be tested in different cities as he traveled across the country and find totally incompatible results in the tests.

The National Institute of General Medical Sciences this past year launched a major effort in research in the automation of clinical laboratories. One of the objectives of the program is to develop new methods of performing the existing tests more quickly, more accurately and less expensively, using smaller specimens.

The need for speed and accuracy can best be illustrated by the tests for appendicitis where an error or delay in an ordinary blood count could result in a serious complication or rupture of the appendix before surgery. An example of the need for reducing costs of certain tests is that for some complicated chronic diseases such as unstable diabetes and nephritis, the cost of laboratory tests may be many times more than the cost of medication.

The Institute is supporting research in all aspects of clinical laboratory automation, including multiple tests on extremely small samples of blood, an important technique for critically ill patients and newborn infants because large amounts of blood cannot safely be taken from them for diagnostic purposes.

Success in this program of integrated basic and applied research will, even if limited, markedly reduce the costs of diagnoses, simple or complicated, will reduce hospital days for the patient, and increase the efficiency of hospital laboratory personnel in a spectacular manner.

I should like to conclude this presentation with a few words about the progress in anesthesiology. This Committee has given anesthesiology a tremendous impetus by its interest as well as the funds it authorized for the support of research and training.

I have spoken of this before, but I should like to repeat that in recent years anesthesia has become even more hazardous than it originally was because of the widespread use of various types of medication whose interaction with different anesthetic agents is not understood, though it is suspected with some justification, that in some instances, the interaction has been fatal.

The anesthesiologist not only produces a state of unconsciousness, but he actively protects the body's vital functions. He artificially breathes for the patient, regulates his temperature, blood pressure, and pulse rate. Far more important than rendering a patient unconscious is being able to restore him to consciousness.

The Congress has long recognized anesthesiology as a critical clinical area and authorized the research and training program of the National Institutes of Health in 1957. In 1958, the effort to solve the manpower problem in anesthesiology got off to a slow start with two research training programs for a total of \$30,000.

This past year, for the first time, we have been making progress. One encouraging figure is that the number of research grants supported by the Institute increased from 11 in Fiscal Year 1964 to 27 in Fiscal Year 1966, an upward trend that has continued this year.

The Fiscal Year 1967 Appropriations Bill which specially allocated \$1 million for the clinical training of anesthesiologists was a milestone in the Institute's history.

Between November 1966 when the \$1 million was made available to the Institute, and March of this year, guidelines were developed for this new grant program by Institute staff and leading anesthesiologists. Residency training directors in 200 hospitals were notified of the program. The response was immediate, indicating the great interest and need for this type of support.

Some 65 applications were received by the Institute. The total amount of these requests was \$4,336,000, more than four times the amount appropriated for the program.

After the customary rigorous scientific review by two NIH reviewing bodies, 39 of the 65 applications were approved. Of these 39, the \$1 million will enable the funding of 31 grants, in greatly reduced amounts from those requested and which will permit in many instances only a token program, the training of but one or two residents. The grants will support about 70 physicians for their first year of anesthesiology training. Considering the critical shortage of anesthesiologists, this is a small start, but it is a start. To insure the continuation of the program on a strong, positive basis and to insure its growth, I should like to suggest that the Committee earmark at least \$2.5 million for this program for next year.

Along with this new clinical training program, the entire field of anesthesiology will receive additional, unprecedented impetus from the establishment of anesthesiology centers, the first of their kind, for research and training.

The first awards for this type of multidisciplinary center will be made before the end of this month. At these specialized centers, scientists from many disciplines, using new and traditional investigative techniques, will work together on solving problems ranging from basic science studies to patient care. Clinical investigation will include the management of respiratory emergencies and inhalation therapy, the interaction of various medications with anesthetics, and the effect of anesthetics on various organs of the body. Specialized areas of anesthesiology—obstetrical, pediatric, and geriatric anesthesia—will also be investigated at these centers as will the development of more effective types of equipment for administering anesthesia and controlling respiration. Though \$500,000 launched this research and training center program, it is my opinion that the amount is rather restrictive from the point of view of maintaining a significant multidisciplinary type of research program in anesthesiology. I should like to request that the Committee authorize \$1 million for these important anesthesiology research and training centers.

Closely allied with developments in anesthesiology are engineering developments. The contributions to the Nation's health from engineering, of course, are by no means limited to anesthesiology. Engineering today is vital to every branch of medicine. In fact, the interdependence of engineering and medicine is perhaps one of the most dramatic developments of the last decade. In every branch of biomedicine, engineers have enabled spectacular advances, especially in diagnosis of diseases and the rehabilitation of patients. It is my belief that the cooperation, the mutual acceptance, and past achievements of engineers teamed with biomedical scientists are such that the time is propitious for giving special impetus to their efforts through engineering research centers where scientists and engineers would focus their combined efforts on applying fundamental engineering principles to biomedical research. An important part of this activity would be the design and development of instruments, special computers, and monitoring devices which will make medical care safer, more precise and more readily available. For this purpose, I suggest that the Committee authorize the establishment of engineering research centers and the sum of \$1 million for their support the first year.

I know that I speak for many physicians when I say that we appreciate the opportunity to appear before you and present our views, based on our experience and our evaluation of the future needs.

My own conviction about the funds needed by the National Institute of General Medical Sciences is shown in the attached table and exceeds the President's Budget figure by \$29 million. My recommended total of \$189 million does not include all the additional funds needed to pay the list of scientifically approved grants now awaiting funding, a backlog of nearly \$32 million which indicates the measure of the scientific activity which is the responsibility of this Institute.

National Institute of General Medical Sciences citizen's budget for fiscal year 1968

	1967 fiscal year	President's budget	Recom- mended
Research grants.....	\$71,172,000	\$80,763,000	\$95,000,000
Pharmacology-toxicology research centers.....	3,500,000	3,500,000	4,000,000
Anesthesiology and diagnostic radiology centers.....	500,000	1,000,000	1,500,000
Anesthesiology centers.....			1,000,000
Instrument development and engineering research centers.....			
Subtotal, research grants.....	75,172,000	85,263,000	101,500,000
Fellowships.....	19,400,000	20,910,000	22,000,000
Training.....	43,735,000	45,729,000	53,000,000
Anesthesiology clinical training.....			2,500,000
Direct operations.....	7,724,000	8,382,000	10,000,000
Total.....	146,031,000	160,284,000	189,000,000

IMPORTANCE OF ANESTHESIOLOGY

Dr. PAPPER. I think you will see the logic in a moment of our doing this in reverse order. Dr. Rhoads admirably covered all the diverse programs and needs of this Institute which is unusually charged with the development of so many programs. For instance, it does provide for the support of the training of a little bit more than half of the postdoctoral research scientists in this country in biomedical science as well as its clinical activities.

I would like to, if I may, make reference to one or two things about which I am going to talk, Senator Hill. I have previously told you and the committee, I hope with some degree of persuasion, why anesthesiology is important to the health of the Nation, to the performance of careful surgery, and to the assistance of patients in pain.

I won't repeat these comments to you except to state that the programs, as they have advanced—and I will summarize a few of those in a moment—have actually made more pertinent, I think, the fact that increased knowledge has made application to patient care so important. Now, again, increased knowledge must be obtained to keep up with the progress that must take place.

Because I believe so strongly in the programs of this Institute, as well as my own field—as you may recall I spent some 6 months full time working with Dr. Stone as his sort of postdoctoral fellow in this Institute to try to help these programs—I think that your committee ought to feel pride in what it has helped us to do.

I should also add if I may, that I have just recently returned from Southeast Asia and Vietnam, about 5 weeks ago, on behalf of the Armed Forces, and had the opportunity to see some of the resuscitation aspect of anesthesiology and the work trauma to which Dr. Rhoads referred.

Military trauma is actually a very minor part of American trauma in toto, both in terms of patients' suffering and in expense. And if it is important to take care of our troops, as I think it is, it is even more important to learn something about how to take care of the rest of us.

I would like to address myself for a few moments to tell you about what you have helped us do in anesthesiology and where we sit.

FINANCIAL SUPPORT OF PROGRAM

You might recall, Senator, when my colleagues and I first came to you some 10 years ago, we had a total of \$30,000 of support for this program and it took a long time to really get moving and help people.

It was not really until 1964, with your help, that we made some headway and I am pleased to report to you that in the years from 1964 to now, the development of research support and research training has trebled, and we are, I think, beginning to get on our way.

There are a few points to make to you about this specialty at the moment. I would respectfully suggest that anesthesiology remain at the Institute of General Medical Science where it can keep its close ties with the basic sciences, especially the pharmacology program which is going on and with the clinical science program of which surgery is such an important part.

I do not know whether we are marriage brokers or bride and groom, but we certainly have a foot in each of these camps and like to keep this going.

RESEARCH CENTERS

With your help, also the program of centers to which Dr. Rhoads referred, is well underway.

I do not know what the Surgeon General has awarded, but I know there were several fine applications for the modest amount of money available, half million dollars, to begin this program. I would respectfully request that it be increased, probably to something like \$1½ million for the next year.

At the risk of possibly proposing something that is a little radical, I would also suggest that there be no matching funds for these centers. Anesthesiology has no sex appeal at all, Senator Hill. We cannot get private funds from people. I know that.

Senator HILL. Now, in that connection, Doctor, my father who is a surgeon also said, "The patient is on the wrong end of the knife." I would think that patient would be interested in anesthesiology.

Dr. PAPPER. He should be.

Senator HILL. How about that, Dr. Rhoads?

Dr. RHOADS. Several patients are most appreciative to Dr. Papper and others I know.

Dr. PAPPER. Dr. Shannon and Dr. Stone both support this concept of no matching funds, so I think it has its approval within the NIH and I hope you would look favorably upon this. In a certain sense, apart from the realities, these centers will be national resources. They won't be university institutes and national resources should belong to the people, and the only way it can is from congressional support.

CLINICAL TRAINING PROGRAM

With respect to the clinical training program which you helped us mount this year, I think you will be pleased to know that there were some 65 applicants for the \$1 million. Thirty-five of these were approved and only 31 could be funded in radically reduced amounts.

Senator HILL. We did not have the money.

Mr. PAPPER. No, sir. I can give you an illustration. In one department I know, three residency positions were authorized for support.

Three people had been appointed. They will start July 1, and there can be no further input into that program for another 3 years, until these men are finished, unless more funds are provided.

We need, I think, \$2½ million to do this for this coming year.

CONTROL AND FLEXIBILITY OF RESEARCH SUPPORT

Now, the next remark I would like to make, sir, is to reinforce Dr. Rhoads' statement about the flexibility of contract and research support for this Institute. I think a tremendous amount of leverage can occur if Dr. Stone is permitted to use \$5 million in the way he sees fit for either contract or research support.

INCREASE REQUESTED

In the final comment I would like to make, the prepared statement that you have, Senator, calls for, in my judgment an increase of \$29 million over the President's budget of which approximately half is in the research category and the other half, broadly speaking, in the combination of training and in the special centers.

I do appreciate once again the opportunity of having been heard by you, Senator.

Senator HILL. We appreciate so much your coming and the very splendid testimony that you brought us. You and Dr. Rhoads have certainly been very challenging indeed.

As you all know we have a problem on our hands with this war going on in Vietnam and one thing I regret, as much as anything else, is that the rank and file of our people perhaps do not know the story of what we are talking about here today, this research. It is not the kind of thing—it is not advertised like "I would rather fight than switch." Do you understand what I mean? It is not an advertisement. So naturally they do not know about it. Many of our newspapers and periodicals do not have much about it, because it is not the type of information that lends itself to what you might call daily news. Is that right?

Dr. PAPPER. Yes, Senator, I forgot to tell you when I came how much Dr. Merritt wishes to be remembered to you.

Senator HILL. Give him my warmest and my best.

We thank you again.

STATEMENT OF HON. EDMUND S. MUSKIE, U.S. SENATOR FROM MAINE, ACCOMPANIED BY DR. FREDERIC G. BURKE, MEDICAL DIRECTOR OF THE CHILDREN'S CONVALESCENT HOSPITAL OF WASHINGTON, D.C.

DEVELOPMENT OF CHILDREN'S RESPIRATORY DISEASE CENTERS

Senator HILL. I see my colleague is here. Will you kindly come forward, Senator Muskie, and please bring your witness with you.

Senator MUSKIE. Thank you, Mr. Chairman.

Mr. Chairman, it is with a great deal of pleasure that I appear before you today for the purpose of introducing Dr. Frederic G. Burke, a most distinguished pediatrician and a personal friend.

Dr. Burke has been active in the treatment and diagnosis of children's chronic respiratory diseases. His work in this field has been outstanding.

One of the areas of research in children's respiratory diseases which needs a greater concentration of effort is the part played by air pollution on the health of our children. The development of Children's Respiratory Disease Centers, established under the Public Health Service, would provide focal points for clinical research and would act as a catalyst to advance the progress of research in this important field.

Mr. Chairman, I am sure the committee will find Dr. Burke's remarks to be of extreme interest.

Senator HILL. Please proceed in your own manner, Dr. Burke.

Dr. BURKE. Mr. Chairman, my name is Dr. Frederic Gerard Burke. I am a professor of pediatrics at Georgetown University, medical director of the Children's Convalescent Hospital in Washington, a recent member of the National Advisory Council to the Institute of Child Health and Human Development, and a consultant to the Surgeon General, and as a pediatrician, have spent the past 25 years observing and treating the diseases upon which I am about to testify.

I am pleased to have this opportunity to submit testimony to the committee and the Congress in support of developing a number of Children's Respiratory Disease Centers to be established by the Public Health Service Bureau of Disease Prevention and Environmental Control.

CHILDHOOD CHRONIC RESPIRATORY DISEASE INCREASE

The increasing incidence of chronic respiratory disease in childhood is apparent to all who work in pediatrics due in part, I believe, to advances in other areas of research, such as nutrition and microbiology. A number of children survive today from formerly fatal insults only to be afflicted with chronic lung decompensation. This is not the only factor, and severe respiratory disorders appear to be increasing.

COORDINATED, MULTIDISCIPLINED APPROACH TO TREATMENT

I postulate a time-biologic continuum in these pulmonary diseases which occur at different ages. Beginning with the acute respiratory distress syndromes of the newborn and presenting clinically as bronchiolitis, croup, bronchitis, acute asthma, the chronic asthma-emphysema complex, cystic fibrosis, and others. While the etiologic factors and cellular responses of these medical entities may vary—they all have several effects in common, especially air hunger, that need elucidation and clinical research. The best methods of treatment of these frequently crippling conditions need to be taught to our medical students, nurses, technicians, and parents. This could be best done through a coordinated, multidisciplinary approach at a children's respiratory disease center.

DISEASE EFFECTS ON YOUNG

I must point out that the effects of severe lung disease in childhood leaves scars and robs the individual of his pulmonary reserve. Chronic pulmonary disorders in young and middle adult life frequently have

their onset in childhood. Chronic asthma, for instance is a potentially preventable disease; the magnitude of the crippling effects in adult life from childhood asthma can only be estimated since morbidity statistics are frequently hard to obtain.

In the 1963 National Health Survey of children in the United States, the data showed more than one-third of all chronic illness reported for children under 17 years was caused by hay fever, asthma, severe exzema, or sinusitis. Nearly one-fourth of all the days reported lost from school because of chronic illnesses are due to severe asthma. These figures are considered conservative and are probably much higher. The crippling psychological, pulmonary, and economic effects of childhood initiated asthma in adult life can only be guessed at, but they are high.

The saddened plight of the air-hungry child stimulates panic in the patient, his family and, indeed, sometimes to his physician. Many family units have been uprooted and broken by the frightening visitation of acute and chronic respiratory distress in a child.

RESEARCH REQUISITE

While the role of genetic endowment and biologic and psychologic factors are undoubtedly important components in the causation of asthma, another, and quite important, is the physical environment of the child—the urgency of investigating the role of air pollution and environmental contamination in the production and aggravation of these diseases cannot be overstated. Medical annals are filled with volumes dealing with the effects of climate on human disease, but there is a signal lack of controlled scientific observation on the human effects of polluted air.

We are accustomed to thinking that a diseased condition is brought on by a single cause, a classic view that is no longer tenable for many disease states. While there is frequently a simple association of an infectious agent producing an acute disease state, this concept simply does not answer many chronic diseases which are on the rise today.

Chronic bronchitis in Great Britain, once thought to be a specific disease entity, similar to chronic asthma, develops over a long period of time and can become crippling through a combination of factors. These include air pollution, smoke, a variety of respiratory allergens, repeated and recurrent bouts of respiratory infections, occupational exposures, and psychological trauma—all conditioned, perhaps, by genetic factors.

It seems apparent that there is probably no simple cause of chronic asthma, but air pollution is certainly part of the etiological complex and one that has not been extensively evaluated.

Indeed, with due consideration of the full magnitude of the problem of chronic pulmonary disease, there needs to be a greater, concerted effort made, if human and national needs in this area are to be met.

CENTER BENEFITS

The development of these centers would provide a great stimulation to more clinical research, provide an ideal setting for technical and professional training and initiate models of exemplary service and care for affected children and their families. Only by means of such

centers can longitudinal and multifactorial approaches be made to chronic pulmonary disease. In such a setting, many medical and behavioral scientists can focus their talents and tools to provide a significant thrust against lung disease. The disciplines of pediatrics will be supplemented by those of psychiatry, psychology, immunology, virology, genetics, sanitary engineering, environmental health sciences and many others and will be brought on this target and dispel a smog of ignorance that pervades this great area of human health needs. Since this multidisciplinary approach is in the nature of a center, an effective faculty of teachers and treators will thus be assembled to effectively disseminate this knowledge and care to a large number of patients and physicians surrounding the geographic region. Since these medical students and trainees establish their practices all over the country, the medical benefit to patients will be nationwide.

FUNDS REQUEST

I would hope and strongly recommend that \$750,000 be added to the appropriation for the National Center for Chronic Disease in fiscal year 1968 to provide first-year grants of approximately \$150,000 for five pediatric pulmonary centers. This would enable the Public Health Service to discharge this vital health responsibility.

At all levels of research action, with all available resources at our disposal, a concerted and determined effort by the Congress and physicians must be structured to bring relief and open the windows of ignorance to let in the air of enlightenment for our breathless children.

This concludes my statement. I thank you for the privilege of appearing.

SUBCOMMITTEE RECESS

Senator HILL. Thank you, Senator Muskie, for bringing Dr. Burke, who gave us a most excellent statement.

The subcommittee will recess subject to call of the Chair.

(Whereupon, at 3:25 p.m., Wednesday, June 7, 1967, the hearing was recessed, to reconvene at the call of the Chair.)

DEPARTMENTS OF LABOR AND HEALTH, EDUCATION, AND WELFARE, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1968

FRIDAY, JUNE 23, 1967

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:20 a.m., in room 1224, New Senate Office Building, Hon. Lister Hill (chairman) presiding.
Present: Senator Hill.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

NONDEPARTMENTAL WITNESSES

STATEMENT OF MRS. PEYTON HAWES DUNN, SECRETARY, WARDS (WELFARE OF ANIMALS USED FOR RESEARCH IN DRUGS AND SURGERY)

PROFESSIONAL CARE OF RESEARCH ANIMALS

Senator HILL. The committee will kindly come to order.

Mrs. Dunn, Mrs. Peyton Hawes Dunn, will you come forward, please?

Mrs. DUNN. I will have this material put in the record, Senator Hill.

Senator HILL. All right.

Mrs. DUNN. I am the secretary of WARDS, and this has been my voluntary job since about 1953, when we discovered the terrible conditions of animals used in research.

Senator HILL. Yes.

Mrs. DUNN. I think you remember this.

Senator HILL. Oh, I remember it well, I should say.

Mrs. DUNN. And as you know, our purpose is to obtain good care of animals, professional care, and not interfere with research.

First, I want to praise you for the wonderful things you have done in establishing research and your foresight in building hospitals across the country. Because of you we are in a good position—because of your dedication.

Now we are in a second phase, which seems to me to be reorganization of some things, and the work for manpower: nurses, general practitioners, and veterinarians.

Senator HILL. We have 125,000 nurses who are trained and prepared, but are not in business.

Mrs. DUNN. Women do drop out to care for families; this must be understood.

Senator HILL. That is right.

Mrs. DUNN. Animal care is really in the subbasement of this thing.

Senator HILL. Yes.

Mrs. DUNN. I mean, literally in the subbasement.

We have central organizations of all kinds. We have cancer, heart, we have old age, youth, everything, but we have no real setup for animal care in the Government.

This is the reorganization of U.S. Public Health Service, and the word "animal" is not mentioned, and still the animal is used in all these institutes. So that the disorder goes all the way down to the local level. I have here the description of a man who resigned from his post at a hospital because he couldn't stomach the disorder, and the failure to have any professional people in his setup at all.

Senator HILL. Yes.

Mrs. DUNN. A man who comes off the street is expected to make cardiac punctures, draw blood, give shots, anesthetize animals, and dispose of them, without any training.

Now, on the other hand, we do have professional care in some places. This is an account of Dr. Kaslow, at the Jewish Hospital in Brooklyn. She has established excellent care. She goes on the theory that a calm, trustful animal is best for research, and she produces this kind of an animal. She wants her animals back to normal after surgery as soon as possible.

Also, there is a memorial here to Dr. Bradley who saw this problem in 1954. He called the storage of animals for research "Filed Away for Life."

RECOMMENDATIONS

Now before this committee, there are a number of things that WARDS strongly supports, short of organizing this subject properly. This would be pilot programs to supply directly equipment and some strategic personnel to certain research centers. This is being done, and it is excellent. We need disease control centers for animals. The study of special species, to find the best animal to use in a given experiment or problem. Now sometimes they use three or four species of animals because they don't know enough to choose the right species. This could save Government funds. We are behind the much needed scholarship and training programs.

The trouble is that funds for construction and maintenance go into a general pot so the animals have not had what they needed for years. We must put the expenditure of these funds directly in the hands of professionals in animal care.

Finally, a last word about WARDS, which, as you know, has helped build quarters at George Washington, Georgetown, and the Washington Hospital Center. We came before you to work for the better housing of animals in the Food and Drug Administration. Less than half the funds for this building went to animal care though it was called the expensive doghouse.

We have a program at Howard University for research. We also have given out two scholarships for junior college training for research and intend to give some more.

Senator HILL. Thank you very, very much.

Mr. DUNN. You are very welcome.

Senator HILL. You know, your mother and father used to be our neighbors.

Mrs. DUNN. I know, we have been longtime friends.

Senator HILL. And I have thought about you many, many times.

Mrs. DUNN. Thank you very, very much. This program of WARDS is a perfectly constructive thing, Senator.

Senator HILL. Oh, indeed.

Mrs. DUNN. We are not just dreamers, but we are workers. This is a practical approach, I think.

Senator HILL. It is, indeed, and I want to thank you very much for your appearance and your testimony here this morning.

Mrs. DUNN. Thank you.

STATEMENT OF MISS GERMAINE KRETTEK, DIRECTOR, WASHINGTON OFFICE, AMERICAN LIBRARY ASSOCIATION

PREPARED STATEMENT

Senator HILL. Mr. Mumford, are you trying to catch a plane today?

Mr. MUMFORD. No, sir; I am not pressed for time at all.

Senator HILL. Not pressed for time.

Miss Germaine Krettek.

Glad to have you back with us.

Miss KRETTEK. Thank you, Senator. I am very glad to be here and I know that you are pressed for time, and so may I ask that my entire statement be made a part of the record?

Senator HILL. We will have it appear in full in the record.

(The statement follows:)

My name is Germaine Krettek. I am Associate Executive Director of the American Library Association, which for nearly a century has been dedicated to the development of libraries as essential agencies in the progress and growth of our Nation. Our organization is a professional, non-profit association with a rapidly growing membership of over 35,000 librarians and laymen.

It is a privilege to testify before this Committee on the various items in the HEW Appropriations Bill (H.R. 10196) which involve libraries. We fully realize the heavy demands for funds which are resulting from the international situation, but we also feel obliged to point out that the continued progress of the Nation is a vital concern and depends in a marked degree upon the prompt fulfillment of the urgent needs of the people of the United States for library service in the fields of education, economics, science, culture and everyday living.

In considering the requirements for funds for Fiscal Year 1968 for the various Acts with substantial library involvements, I should like to present a few facts regarding their main objectives, their accomplishments and needs and our recommendations regarding appropriations.

LIBRARY SERVICES AND CONSTRUCTION ACT (PL 89-511)

This Act is intended to help the States in overcoming the deficiencies in public library services (Title I) and in public library construction (Title II). It provides also for encouraging interlibrary cooperation of school, college, university, public, and special libraries and information centers in order to bring the most effective library service to the people (Title III); it gives financial assistance

for library service in State institutions such as prisons, hospitals and correctional schools (Title IV-A); and extends and improves library service for the blind and physically handicapped (Title IV-B).

These data indicate some of the serious deficiencies in public libraries of the United States, as of 1967:

No local public library service available: 12 million people.

Libraries with inadequate financial support according to national standards serve: 169 million people.

Book shortages based on existing stock compared with national standards: 100 million volumes.

Publicly-owned public library buildings over 40 years old: 37 percent.

Systems of cooperating libraries: Only a start.

Library service in State institutions and to the blind and physically handicapped: Wholly inadequate in practically all States.

According to replies to a limited questionnaire sent in February of this year to state library agencies concerning their programs and plans under the LSCA, it is clear they could use effectively the full amount of funds authorized and will be handicapped in their programs by the House reductions. (Table on page 2-A.)

Library Services and Construction Act funding, fiscal year 1968, Public Law 89-511

[In millions of dollars]

	Federal authorization		State and local matching fund availability ¹		Administration request, Federal funds	House allowance
	Federal amount	State and local matching requirement (estimated)	State and local funds available	Federal funds that could be utilized		
Total.....	114.0	117.8	323.3	312.4	68	68
Title I.....	45.0	46.6	189.1	182.4	35	35
Title II.....	50.0	51.8	115.0	111.2	27.185	27.185
Title III.....	7.5	7.5	8.5	8.5	2.375	2.375
Title IV-A.....	7.5	7.8	5.3	5.1	2.120	2.120
Title IV-B.....	4.0	4.1	5.4	5.2	1.320	1.320

¹ Data based on partial returns of State library agency estimates as of March 1967.

State library agencies estimate that if Federal funds for Title II are cut back to \$27.185 million in Fiscal Year 1968 (from \$40 million in Fiscal Year 1967) the number of projects that could be approved would drop from about 400 to 250.

Only a start has been made in setting up systems of cooperating libraries. State agencies reported that 64 Title III interlibrary cooperative projects costing \$10.5 million are planned for Fiscal Year 1968. The largest group of projects were reported for reference and resource networks and special communications projects which will make available better reference and information services to millions of people.

Library service in State institutions and to the blind and physically handicapped is wholly inadequate in practically all the states. Twenty-nine State agencies report that over 525 State-supported prisons, hospitals, and other institutions would benefit from Title IV-A projects costing \$5 million. About 365,000 prison inmates, hospital patients, juvenile delinquents, and others would benefit from library books and other services. Over 675,000 good books could be added and 280 persons hired to help run the libraries.

Thirty-two States reported that they have current plans for 53 Title IV-B projects to help the handicapped who cannot use conventional library materials. Pennsylvania, for instance, states they will need \$200,000 to start giving library service to the estimated 150,000 handicapped in the State who are not blind. Maryland plans to establish a unit on Library Service to the Blind and Physically Handicapped to work with public libraries in assisting the handicapped. Rotating collections of materials will be placed in larger public libraries. The first year cost of this project is estimated at \$90,000.

In addition to the above general items, I should like certain statements summarizing activities in a few States, to appear as Appendix A for the record.

Also available for the record are tables (Appendix B) showing the difference in amounts for each State of the amounts authorized for each Title of the LSCA and the budget recommendations, accepted by the House. The decrease for Alabama, for instance, is \$179,626 for Title I, \$409,818 for Title II, \$96,639 each for Title IV-A, and a decrease of \$48,140 for Title IV-B.

For New York the decrease for Title I is \$922,801; for Title II, \$2,105,370; for Title III and Title IV-A, the decrease is \$536,467; and for Title IV-B, \$247,311.

In view of the significance of these programs to the urgent needs of the Nation, we urge the appropriation of the full authorization of each Title.

ELEMENTARY AND SECONDARY EDUCATION ACT, TITLE II

The purpose is to provide funds to the States for school library resources, textbooks and other instructional materials for the use of children and teachers.

The deficiencies in school libraries shown by these statistics are only examples of many more which could be given:

Total number of public elementary schools in 1966	75, 773
Of these, those with libraries numbered	23, 679
Of these, those without libraries numbered	52, 094
Of these, percentage of schools without libraries (percent)	70
Private elementary schools show a similar condition	
Elementary public schools still without libraries, estimated in 1967	47, 000

Minimum annual per pupil expenditure for school library books, excluding reference and periodicals, recommended by accepted national standards, \$4-\$6 per pupil. But average annual amounts spent for books in schools with libraries was only \$2.08 per pupil. Nationally accepted standards call for 10 books per pupil, but U.S. Office of Education data shows only an average of 5.7 books per pupil.

The authorization for Fiscal Year 1968 is \$150 million, but the House allowance for Title II is only \$104,457,000. This amount would provide approximately \$2.00 per pupil for school library resources, textbooks and other instructional materials for the 50,500,000 pupils in public and private schools, a sum far below the amount needed for library books alone. Attached is a table (Appendix C) showing the amounts authorized for each State and the amounts allowed by the House bill.

The importance of school library resources is evidenced by the decisions of the States to allocate the major portion of their Title II funds for this purpose during the brief existence of the legislation. As illustration of what is being accomplished, the following excerpts from letters may be given:

From a classroom teacher in Casper, Wyoming: "I wish to express my appreciation for the soon-to-be new library in our elementary school, made possible by the Title II Program of PL 89-10, The Elementary Secondary Act of 1965. As a classroom teacher, I have learned that children are eager to find books that will answer their questions and strengthen their goals. In meeting the challenging demands from all fields of learning for greater knowledge today, this library program is an important contribution to education."

From an Administrative Assistant, Flagstaff Public School, Arizona: "We are participating in the ESEA, Titles I, II, III and NDEA Title III. With the help of federal money we have initiated a complete library program, doing away with individual classroom collections, to centralize libraries in ten elementary schools, as well as augmenting our two Junior High libraries and our program for our new Coconino High School.

We will have, in the fall of 1967-1968 centralized material centers in fourteen public schools as opposed to three centers in only three schools in 1965-66. We have not only established the new libraries but have supplemented our Junior Highs and High School with printed and non-printed materials. We have been enabled to employ twelve qualified librarians and a library supervisor.

In addition to our regular library program, which has met with such enthusiasm, we now expect to keep our libraries open during the summer months. Our library program, in connection with our other federal programs, Remedial Reading, Counseling and Audio-Visual has enriched our entire school program."

From a high school librarian, Sycamore, Ohio: "As a school librarian I am more aware of how it (ESEA) affected the high school as that is my area of work. As far as the number of volumes on the shelves in the high school library, we have never been quite able to reach the number required by the State standards or by the North Central Association Standards, but are now quite close to it.

In a class of slower pupils a controlled reading program is in effect and seems to be very worthwhile. New equipment has also been added to the High School Visual Aids Program and is used quite extensively.

A summer reading program was instituted last summer for elementary pupils as a result of this Act and is to be continued this coming summer. Too, a central library has been established in each of the elementary buildings."

In view of the essentiality of the school program to the Nation, the American Library Association urges that the full authorization for the Elementary and Secondary Education Act be granted, including the \$150 million authorized for Title II for Fiscal Year 1968.

NATIONAL DEFENSE EDUCATION ACT (PL 88-665)—TITLE III

Another program of particular concern to the American Library Association is Title III of the NDEA which provides in Part A for instructional equipment and materials in ten critical subject fields, and has been of great value in improving educational programs in elementary and secondary schools. In Fiscal Year 1967, \$79.2 million was appropriated. Approximately 42% of this amount has been expended for materials with about 22% for printed and published materials. The House allowance for Fiscal Year 1968, however, is only \$50 million, even though additional categories have been authorized.

In order to carry on without disruption a program of value to education, the Association recommends the appropriation for Title III of the full authorization of \$110 million.

HIGHER EDUCATION ACT OF 1965 (PL 89-329, AS AMENDED BY PL 89-752)

The purpose of Title II of this Act is to improve college libraries and the quality of library service throughout the Nation by providing grants for: Part A—*College Library Resources*—acquisition of books, periodicals, and other library materials by colleges and universities; Part B—*Library Training and Research*—training of all types of librarians—school, college, university, public and special, and research and demonstration projects; Part C—*Strengthening College and Research Library Resources*—adding the Library of Congress to acquire and catalog additional scholarly material, not only for itself, but for the benefit of other research libraries who serve the scholarly community of the United States.

A few of the many justifications for this Act are the following:

1. Surveys have shown that 50 percent of our 4-year colleges and 82% of our 2-year institutions fall below the nationally accepted minimum standards for the number of volumes in their libraries.

2. The great increases in student enrollments have direct bearing on the effectiveness and the cost of college library operation. For example, in the academic year 1962-3 there were 4,345,000 students in institutions of higher education, in the fall of 1965 there were 5,526,325, and the projected estimate for the fall of 1969 is 6,055,000.

3. The shortage of trained librarians is crucial. It is estimated that 125,000 more librarians would be needed to meet current minimum staffing standards of school, college, university and public libraries. The existing library schools graduate each year only about 3,000 new professionals.

4. Library science needs continued research in librarianship in such areas as automation which will speed up the retrieval of information from storage to the user.

5. It is estimated that the Library of Congress is unable at present to acquire and catalog promptly some 100,000 titles per year essential for research and scholarly study, many in foreign languages. If a substantial portion of these publications were acquired by the Library of Congress and promptly cataloged, it would help fill the special needs of the Congress and other branches of the Federal government, and help the requirements of science, industry, and scholarly activity for these specialized materials.

College and university libraries are essential to the educational, scientific, technological and cultural needs of the Nation. The urgency is so great we urge the appropriation of the full authorization of \$72,770,000 for all parts of Title II of the Higher Education Act.

THE HIGHER EDUCATION FACILITIES ACT OF 1963 (PL 88-204, AMENDED AND EXTENDED BY PL 89-752)

We also support more adequate appropriations for a program closely aligned to the Higher Education Act. Only \$400,000,000 has been recommended in the budget for undergraduate facilities, for instance, and \$50 million for graduate instruction while \$848 million (\$728 million undergraduate and \$120 million graduate) has been authorized for fiscal 1968 to carry on this important program to help institutions of higher education construct academic facilities, including libraries. All aspects of higher education have increasing construction needs. We urge the appropriation of the full authorized amounts.

MEDICAL LIBRARY ASSISTANCE ACT OF 1965 (PL 89-291)

The American Library Association also urges this Committee to consider favorably the adequate funding of this vital legislation. We believe that this program, designed to improve and expand the basic resources and facilities of health science libraries, as well as to train medical librarians, help compile scientific knowledge and develop a national system of regional health science libraries, is essential to the general health and welfare of the Nation.

INTERNATIONAL EDUCATION ACT OF 1966 (PL 89-698)

The purpose of this Act is to provide for the strengthening of the educational resources in the United States so that international studies and research may be made and our citizens may have a better understanding of countries abroad. As Section 2 of the Act declares:

"... knowledge of other countries is of the utmost importance in promoting mutual understanding and cooperation between nations . . . it is both necessary and appropriate for the Federal government to assist in the development of resources for international study and research and to assist in the progress of education in developing nations, in order to meet the requirements of world leadership."

In addition to travel, knowledge of other countries can best be gained through the books, periodicals, and other materials which libraries make available. The Council of the American Library Association approved a policy statement on June 30, 1966, which includes the following paragraph:

I. Librarians should seek ways to promote the use of all materials which will inform the citizens of the United States concerning the issues involved in international affairs and the points of view of other peoples of the world. They should also lend their special abilities and services to facilitate an adequate interpretation abroad of the United States.

The Association, in view of the great significance of international understanding in these troubled times, urges that the Budget recommendation of \$36,525,000 be granted for Fiscal Year 1968. We regret that the House disallowed any funds for this important new program.

Mr. Chairman and Members of the Committee, in this statement the American Library Association has endeavored to give you justifications for each of the appropriations involving libraries—public, school, higher education, medicine, and international education. We appreciate the opportunity of presenting them to you and hope that you will act favorably upon them.

APPENDIX A

The following are excerpts of summary statements from a few States regarding Library Services and Construction Act programs:

Alabama: "Public library service in Alabama has grown rapidly during the eleven years under the Library Services Act and the Library Services and Construction Act. At the beginning of the program in 1957 the per capital public library expenditures was about 34 cents in Alabama. By 1966 it was up to 95 cents, an increase of well over 200 percent in State and local expenditures. This rep-

resents a huge gain for Alabama although it is still far below the current national standard of \$5 per capita.

"In 1955-56, 892,501 people in Alabama had no local library service. As of August 1966 only 40,000 Alabamians had no local service. The balance of Alabama's population receives inadequate service in terms of national standards, according to the State library agency.

"Federal funds have been an impetus to State and local funding for local public library service. State and local funds which amounted to about \$1 million in 1956 reached over \$3 million in 1966, an increase of 200 percent after 10 years of Federal support."

Alaska: "The State Librarian reports that 'Our planning includes the improvement and growth of the larger public libraries in the State, larger in terms of resources and local financial ability, so that each can assume library service in its borough (county) through the use of branches, deposit stations, bookmobiles and mail service . . . Areas not served through a borough library would continue to receive library service directly from the State Library. We are dependent upon continuing federal aid to achieve these goals.'

"Alaska first participated in the construction program under Title II in fiscal 1966. Three projects were approved that year and three more had been approved by April 1967. These are: a new library building for Sitka and a branch for Anchorage, additions to the Seward and Palmer libraries, and remodeling of the Juneau Memorial Library and the Alaska State Library in Juneau."

Florida: "Florida has made great strides in public library service over the past eleven years. The Florida State Librarian reports 'Most of the increase in services and local support was stimulated by federal grants. In 1955 only three counties had unified countywide service, while in 1967 forty counties organized in 23 library systems served 56% of Florida's population.'

"Libraries receiving improvement grants must prepare a long-range program showing how they plan to work toward quality service as defined in Standards for Florida Public Libraries, prepared in 1966.

"Florida has approved 20 public library building projects under Title II of LSCA since the beginning of the program in fiscal 1965 to April 1967. Two branch libraries in Hillsborough County have already been completed under the program. These new buildings in Ruskin and Temple Terrace add 10,653 square feet to the library floor area of the system. The other eighteen projects are all in progress."

Georgia: "Public library service in Georgia has made significant progress in the decade covered by the Library Services and Construction Act. Federal funds made available to library systems in the State have stimulated public interest in improved library service, helped to increase local appropriations, provided additional books, bookmobiles and other needed equipment. Federal funds have enabled libraries to be open longer and made possible professional training for staff members to improve the quality of service given. Combined with State and local funds, the Federal money has enabled the libraries of the State to move several steps closer to the goals and objectives set forth in the State plan for public library development.

"Libraries in Georgia are being used more today than 10 years ago. Circulation rose from 13.7 million in 1956 to 20.7 million in 1965, an increase of over 50 percent.

"All of Georgia's 159 counties now provide some form of public library service to all of their citizens. The quality of the service varies, but as county citizens have become convinced of the advantages of cooperation in larger units of service, service has improved steadily.

"The State plan for public library development anticipates the eventual organization of the State's 159 counties into 40 or more regional or multi-county library systems. These systems would provide central ordering and processing of materials, bookmobile service to all parts of the system where needed, professional supervision of all branches and service points, and an active program promoting library use."

Mississippi: "Mississippi reports considerable progress during the first 10 years of the Library Services and Construction Act program. In 1956, the year prior to the Federal program, 46 counties were attempting to offer countywide library service. In 1966 a total of 66 counties were offering such service. In 1956, 21 counties had banded together to form 7 regional libraries; in 1966, 38 counties were cooperating within 13 regional systems. Under LSCA 164 Mississippi towns, cities, and unincorporated communities benefitted materially during the 10 year

program; 99 communities receiving established local public library service for the first time, and 65 benefitting from improved buildings, book collections, and expanded services. However, 92 communities still did not have a local public library in 1966.

"Nevertheless, the Mississippi Library Commission reports that no community in Mississippi had adequate public library service as of June 30, 1966.

"Another extensive project spearheaded by the State agency over the years has been that of directing workshops to train local librarians in the most modern concepts and methods of librarianship so that they may give better service to the people."

Nevada: "In the first ten years of the Library Services Act—Library Services and Construction Act, total public library operating expenditures in Nevada increased from about \$170,000 in 1956, the year prior to the Library Services Act, to about \$687,000 in 1966. According to national standards, Nevada should have had about \$1.4 million available for public library operating expenditures in 1966.

"Nevada has used Federal funds over the ten-year period mainly in four types of activities: improving the services of the State library, developing and promoting a State plan for library development, cooperative book processing, and improvement grants to local public libraries.

"The Cooperative Processing Center began operation in 1959. From September 1959 to June 1966, nearly 35,000 books have been processed. Currently there are 10 member libraries serving 11 Nevada counties."

New Hampshire: "Bookmobile service to local libraries has been greatly improved due to LSCA . . . In 1956 the total book stock for the four bookmobiles was 65,269; in 1966 it was 122,500. Circulation from the bookmobiles rose from 143,437 in 1956 to 282,098 in 1966. . . .

"The effect on local public libraries is evident from the following statistics for New Hampshire public libraries:

	1956	1966
Number of volumes held.....	2, 189, 076	2, 514, 913
Circulation.....	3, 084, 916	4, 076, 438
Expenditures.....	\$755, 746	\$1, 409, 783

"In summary, it can be said that progress has been considerable in New Hampshire and that most of this progress was sparked, and in many cases actually financed, by the Library Services and Construction Act.

"Despite these improvements, per capita library expenditures in New Hampshire were \$2.32 in 1966 compared to a national per capita standard of \$5.

"Progress continues in the Statewide Library Development Program involving over 175 local public libraries (Affiliated Libraries) serving over 90 percent of the population.

"Under Title II, Construction, 10 projects were approved for new public library buildings, and additions or improvements to existing buildings from fiscal 1965 through February 1967."

New Jersey: "As implementation of this philosophy of larger units of service, the State Library has during the past ten years encouraged cooperative activities and planned its programs around this central theme. Trustee seminars which initiated in 1958 and Regional Institutes which are conducted in conjunction with the New Jersey State Library Association have stressed the various facets of cooperation.

"Significant growth in library support has been made in New Jersey in recent years. In 1956 the year prior to the Library Services Act program, total expenditures for public library services were a little over \$8 million or \$1.67 per capita. By 1966 expenditures had increased 86 percent to over \$15 million. In 1956 there was no State aid for libraries. In 1966 State aid amounted to almost \$2 million. However, the \$2.53 per capita expended for public libraries in 1966 was still far below the \$5 national standard.

"New Jersey is using LSCA Title I funds in a coordinated Statewide effort to increase library resources at three levels of service: the State Library as a Research Library Center, Area Reference Libraries, and local community libraries—all working together to give the best service possible to the people of

the State. Fifteen Area Reference Libraries have been designated and are receiving Federal funds in fiscal 1967.

"Referring to the impact of the Title II program in fiscal year 1966, New Jersey reports: 'The \$940,333 (1966) in LSCA money for construction has had dramatic results in the State of New Jersey.'"

New York: "New York State's Deputy Commissioner of Education reports that: 'In the ten years since passage of the Library Services Act, there has been an almost total transformation of New York's public library landscape. It is the result of an uncommonly common effort by local, State, and Federal agencies to achieve the goals of modern library service in the face of conditions of environment that are changing at a rate faster than in any previous time in history.'

"Over the ten year period from 1956 to 1966 citizens of the State benefited from new or improved library service and construction of library buildings made possible with the aid of over \$10.7 million in Federal funds. In 1956 New York had eight library systems involving 13 counties, plus the Watertown Regional Center. Most of the local libraries whether in rural or urban areas were isolated units with inadequate support, materials, and staff. As of June 1966 the situation had changed markedly: 22 library systems encompassing all 62 counties served over 98 percent of the State's area and people. Of the State's 725 chartered public libraries, only 45 are not members of a system.

"Projects aimed at providing adequate, accessible and useful services to the disadvantaged are the apogee of the New York program. . . . Worthy of special mention are the Pioneer Library System's project for its careful analysis of the Rochester area, and preparation and training of library staff and others for action; the Queens Borough Public Library's Operation Headstart for its training and program materials; the Brooklyn Public Library's and the New York Public Library's projects for their all out concentration on service, proving that the unreachable are not unreachable."

"In addition to its services program under Title I, New York has a very active building program. New York has approved 58 LSCA construction grants under Title II from July 1964 to April 1967. Most of these projects are in cities and suburban areas where population growth has far exceeded the capacities of existing library facilities."

Washington: "The Library Services Act and the Library Services and Construction Act has served to accelerate the library development program of the State of Washington. When the Act was first passed in 1956, the State of Washington was slowly implementing a Regional Plan for Library Development. . . . The (Washington Library) Commission began implementing this plan through a series of demonstration programs with state-federal monies which became available through LSA.

"The first was the Columbia River Regional Library Demonstration, which district was established by vote of the people in the 1960 election, and has become the North Central Regional Library. The second demonstration was an extension of service to Island County from the Snohomish County Library. After a vote by the citizens in Island County and joint action by the County Commissioners of Island and Snohomish Counties, the Sno-Isle Regional Library was established in 1962. Timberland Library Demonstration which began operation in fiscal 1965 is the third demonstration and is continuing in fiscal 1967.

"The State reports that "The seed money provided by the Federal government for building construction has proved a stimulus to more and more areas of our State where plans are underway to construct and/or enlarge library facilities."

West Virginia: "West Virginia has had considerable public library progress in 10 years. Nearly 325,000 rural West Virginians received improved or extended public library services since 1956 when the Library Services Act was passed. In 1956 about 975,000 people received local library service; by June 1966 about 1,350,000 had service, an increase of almost forty percent. In 1957 eight counties had no library service, today every county has some library service. However, despite these increases in services there are still 503,722 persons in West Virginia, or nearly one out of every four citizens, who have no local service.

"During the ten years of the Library Services Act-Library Services and Construction Act, a marked increase has taken place in support for public libraries. Local expenditures for services have nearly doubled from \$522,039 in 1957 to \$1,072,252 in 1966. The State appropriation for the State library agency has more than doubled, from \$85,962 in 1957 to \$174,500 in 1966. However, per capita public

library support of \$.82 in West Virginia was far below the national standard of \$5 in 1966.

"Because West Virginia is sparsely populated much of local library service has been provided over the years by bookmobiles. In 1957 the State library agency had one bookmobile; by 1966 it had thirteen bookmobiles, two trailers and one delivery truck."

APPENDIX B-1

LSCA—Authorizations versus budget, fiscal year 1968

United States and outlying areas	Title I (services)			Title II (construction)		
	1968 authori- zation	Budget recom- mendation	Decrease	1968 authori- zation	Budget recom- mendation	Decrease
Total.....	\$45,000,000	\$35,000,000	\$10,000,000	\$50,000,000	\$27,185,000	\$22,815,000
Alabama.....	813,118	633,492	179,626	901,972	492,154	409,818
Alaska.....	149,371	136,935	12,436	136,908	108,535	28,373
Arizona.....	384,257	312,656	71,601	407,648	244,289	163,359
Arkansas.....	489,937	391,716	98,221	529,459	305,368	224,091
California.....	3,531,013	2,666,778	864,235	4,034,738	2,062,987	1,971,751
Colorado.....	482,881	386,437	96,444	521,325	301,290	220,035
Connecticut.....	653,433	514,029	139,404	717,912	399,862	318,050
Delaware.....	197,424	172,884	24,540	192,295	136,307	55,988
District of Columbia.....	266,769	224,762	42,007	272,225	176,386	95,839
Florida.....	1,180,909	908,640	272,269	1,325,904	704,722	621,182
Georgia.....	960,769	743,951	216,818	1,072,161	577,490	494,671
Hawaii.....	238,132	203,338	34,794	239,217	159,835	79,382
Idaho.....	245,646	208,959	36,687	247,878	164,177	83,701
Illinois.....	2,300,683	1,746,355	1,554,328	2,616,606	1,351,905	1,264,701
Indiana.....	1,117,808	861,433	256,375	1,253,171	668,252	584,919
Iowa.....	701,961	550,334	151,627	773,847	427,909	345,938
Kansas.....	575,583	455,789	119,794	628,179	354,868	273,311
Kentucky.....	763,219	596,161	167,058	844,456	463,314	381,142
Louisiana.....	810,997	631,904	179,093	899,527	490,928	408,599
Maine.....	311,587	258,291	53,296	323,885	202,289	121,596
Maryland.....	776,870	606,374	170,496	860,191	471,204	388,987
Massachusetts.....	1,223,917	940,815	283,102	1,375,477	729,579	645,898
Michigan.....	1,807,777	1,377,606	430,171	2,048,460	1,067,026	981,434
Minnesota.....	845,235	657,518	187,717	938,991	510,716	428,275
Mississippi.....	575,481	455,712	119,769	628,061	354,809	273,252
Missouri.....	1,043,001	805,469	237,532	1,166,945	625,016	541,929
Montana.....	247,299	210,196	37,103	249,784	165,133	84,651
Nebraska.....	408,089	330,484	77,606	435,117	258,063	177,054
Nevada.....	162,275	146,589	15,686	151,781	115,993	35,788
New Hampshire.....	232,489	199,116	33,373	232,713	156,573	76,140
New Jersey.....	1,424,358	1,090,767	333,591	1,606,514	845,426	761,088
New Mexico.....	307,605	255,312	52,293	319,295	199,987	119,308
New York.....	3,763,520	2,840,719	922,801	4,302,737	2,197,367	2,105,370
North Carolina.....	1,094,593	844,066	250,527	1,226,413	654,835	571,578
North Dakota.....	238,061	203,285	34,776	239,135	159,794	79,341
Ohio.....	2,218,874	1,685,152	533,722	2,522,309	1,304,623	1,217,686
Oklahoma.....	608,257	480,232	128,025	665,839	373,752	292,087
Oregon.....	485,098	388,844	97,254	525,034	303,149	221,885
Pennsylvania.....	2,570,979	1,948,566	622,413	2,928,162	1,508,126	1,420,036
Rhode Island.....	287,623	240,363	47,260	296,263	188,439	107,824
South Carolina.....	620,112	489,102	131,010	679,505	380,604	298,901
South Dakota.....	248,554	211,135	37,419	251,230	165,858	85,372
Tennessee.....	878,633	682,542	196,091	977,546	530,048	447,498
Texas.....	2,191,211	1,664,458	526,755	2,490,424	1,288,635	1,201,789
Utah.....	294,421	245,448	48,973	304,098	192,367	111,731
Vermont.....	185,110	163,671	21,439	178,101	129,190	48,911
Virginia.....	965,972	747,843	218,129	1,078,158	580,497	497,661
Washington.....	722,847	565,959	156,888	797,921	439,980	357,941
West Virginia.....	506,124	403,825	102,299	548,116	314,723	233,393
Wisconsin.....	962,660	745,365	217,295	1,074,340	578,582	495,758
Wyoming.....	172,052	153,903	18,149	163,051	121,643	41,408

Maine.....	68,674	40,000	28,674	68,674	(1)	(1)	39,283	25,000	14,283
Maryland.....	131,727	40,000	91,727	131,727	(1)	(1)	70,693	25,000	45,693
Massachusetts.....	192,309	40,000	152,309	192,309	(1)	(1)	100,871	25,000	75,871
Michigan.....	271,432	40,000	231,432	271,432	(1)	(1)	140,236	25,000	115,236
Minnesota.....	140,992	40,000	100,992	140,992	(1)	(1)	75,098	25,000	50,098
Mississippi.....	104,435	40,000	64,435	104,435	(1)	(1)	57,098	25,000	32,098
Missouri.....	167,792	40,000	127,792	167,792	(1)	(1)	88,688	25,000	63,688
Montana.....	59,961	40,000	19,961	59,961	(1)	(1)	34,944	25,000	9,944
Nebraska.....	81,751	40,000	41,751	81,751	(1)	(1)	45,788	25,000	20,788
Nevada.....	48,439	40,000	8,439	48,439	(1)	(1)	23,204	25,000	3,204
New Hampshire.....	57,954	40,000	17,954	57,954	(1)	(1)	33,944	25,000	8,944
New Jersey.....	219,472	40,000	179,472	219,472	(1)	(1)	114,403	25,000	89,403
New Mexico.....	68,134	40,000	28,134	68,134	(1)	(1)	39,015	25,000	14,015
New York.....	536,467	40,000	496,467	536,467	(1)	(1)	272,311	25,000	247,311
North Carolina.....	174,784	40,000	134,784	174,784	(1)	(1)	92,141	25,000	67,141
North Dakota.....	58,710	40,000	18,710	58,710	(1)	(1)	34,320	35,000	9,320
Ohio.....	327,142	40,000	287,142	327,142	(1)	(1)	168,037	25,000	143,037
Oklahoma.....	108,877	40,000	68,877	108,877	(1)	(1)	59,311	25,000	34,311
Oregon.....	92,323	40,000	52,323	92,323	(1)	(1)	51,064	25,000	26,064
Pennsylvania.....	374,858	40,000	334,858	374,858	(1)	(1)	191,807	25,000	166,807
Rhode Island.....	65,426	40,000	25,426	65,426	(1)	(1)	37,666	25,000	12,666
South Carolina.....	110,484	40,000	70,484	110,484	(1)	(1)	60,111	25,000	35,111
South Dakota.....	60,131	40,000	20,131	60,131	(1)	(1)	35,028	25,000	10,028
Tennessee.....	145,524	40,000	105,524	145,524	(1)	(1)	77,566	25,000	52,566
Texas.....	323,393	40,000	283,393	323,393	(1)	(1)	166,170	25,000	141,170
Utah.....	66,347	40,000	26,347	66,347	(1)	(1)	38,125	25,000	13,125
Vermont.....	51,534	40,000	11,534	51,534	(1)	(1)	30,745	25,000	5,745
Virginia.....	157,353	40,000	117,353	157,353	(1)	(1)	83,459	25,000	58,459
Washington.....	124,406	40,000	84,406	124,406	(1)	(1)	67,046	25,000	42,046
West Virginia.....	95,036	40,000	55,036	95,036	(1)	(1)	52,416	25,000	27,416
Wisconsin.....	156,904	40,000	116,904	156,904	(1)	(1)	83,235	25,000	58,235
Wyoming.....	49,764	40,000	9,764	49,764	(1)	(1)	29,864	25,000	4,864

1 See column under title III. Amounts are approximately the same.

APPENDIX C

Elementary and Secondary Education Act authorizations versus budget, fiscal year 1968

	Title II: School library resources			Congressional action on H.R. 10196 HEW appropriations bill		
	1968 authorization	Budget recommen- dation	Decrease	House ¹	Senate	Final
United States and outlying areas, total.....	\$154,500,000	\$105,000,000	\$49,500,000	\$104,457,000	-----	-----
Alabama.....	2,731,113	1,800,874	930,239	-----	-----	-----
Alaska.....	193,035	129,701	63,334	-----	-----	-----
Arizona.....	1,263,305	853,113	410,192	-----	-----	-----
Arkansas.....	1,399,317	966,884	432,433	-----	-----	-----
California.....	14,448,594	9,787,430	4,661,164	-----	-----	-----
Colorado.....	1,647,185	1,114,118	533,067	-----	-----	-----
Connecticut.....	2,171,080	1,458,132	712,948	-----	-----	-----
Delaware.....	403,210	270,021	133,189	-----	-----	-----
District of Columbia.....	521,089	356,087	165,002	-----	-----	-----
Florida.....	4,096,585	2,748,090	1,348,495	-----	-----	-----
Georgia.....	3,324,106	2,256,992	1,067,114	-----	-----	-----
Hawaii.....	598,700	407,038	191,662	-----	-----	-----
Idaho.....	556,915	382,890	174,025	-----	-----	-----
Illinois.....	8,289,828	5,591,129	2,698,699	-----	-----	-----
Indiana.....	3,925,009	2,650,790	1,274,219	-----	-----	-----
Iowa.....	2,245,656	1,531,091	714,565	-----	-----	-----
Kansas.....	1,727,053	1,175,453	551,600	-----	-----	-----
Kentucky.....	2,332,424	1,593,703	738,721	-----	-----	-----
Louisiana.....	2,950,410	2,003,958	946,452	-----	-----	-----
Maine.....	785,055	514,811	270,244	-----	-----	-----
Maryland.....	2,837,887	1,904,186	933,701	-----	-----	-----
Massachusetts.....	4,127,343	2,728,985	1,398,358	-----	-----	-----
Michigan.....	7,185,401	4,887,784	2,297,617	-----	-----	-----
Minnesota.....	3,071,862	2,068,916	1,002,946	-----	-----	-----
Mississippi.....	1,812,389	1,260,296	552,093	-----	-----	-----
Missouri.....	3,468,884	2,401,130	1,067,754	-----	-----	-----
Montana.....	575,773	395,520	180,253	-----	-----	-----
Nebraska.....	1,151,397	796,691	354,706	-----	-----	-----
Nevada.....	338,013	229,847	108,166	-----	-----	-----
New Hampshire.....	518,558	349,514	169,044	-----	-----	-----
New Jersey.....	4,991,252	3,371,589	1,619,663	-----	-----	-----
New Mexico.....	906,125	620,337	285,788	-----	-----	-----
New York.....	12,619,222	8,618,018	4,001,204	-----	-----	-----
North Carolina.....	3,634,274	2,504,777	1,129,497	-----	-----	-----
North Dakota.....	513,039	357,659	155,380	-----	-----	-----
Ohio.....	8,305,644	5,643,817	2,661,827	-----	-----	-----
Oklahoma.....	1,871,559	1,262,746	608,813	-----	-----	-----
Oregon.....	1,543,745	1,013,281	530,464	-----	-----	-----
Pennsylvania.....	8,688,249	5,972,654	2,715,595	-----	-----	-----
Rhode Island.....	658,410	445,330	213,080	-----	-----	-----
South Carolina.....	1,987,356	1,363,223	624,133	-----	-----	-----
South Dakota.....	584,748	399,827	184,921	-----	-----	-----
Tennessee.....	2,740,727	1,888,685	852,042	-----	-----	-----
Texas.....	8,229,062	5,588,951	2,640,011	-----	-----	-----
Utah.....	899,965	610,149	289,816	-----	-----	-----
Vermont.....	322,578	216,741	105,837	-----	-----	-----
Virginia.....	3,209,083	2,182,362	1,026,721	-----	-----	-----
Washington.....	2,458,750	1,637,304	821,446	-----	-----	-----
West Virginia.....	1,326,691	932,364	394,327	-----	-----	-----
Wisconsin.....	3,542,161	2,386,251	1,115,591	-----	-----	-----
Wyoming.....	269,254	188,761	80,493	-----	-----	-----

¹ Amounts would be the same as indicated under Budget recommendation. Difference in total figure is due to need for new authorization for Indian and overseas dependents' schools in pending Elementary and Secondary Education Act of 1967.

Source: ALA Washington Office, May 1967.

REQUIREMENTS FOR LIBRARY FUNDS

MISS KRETTEK. For the record, my name is Germaine Krettek, and I am an associate executive director of the American Library Association, and as always, Senator, it is a privilege to testify before this committee on the various items which involve libraries in the HEW appropriations bill.

We fully realize the heavy demands for funds which are resulting from the international situation, but we also feel obliged to point out that the continued progress of a nation is of vital concern and depends in a marked degree upon the prompt fulfillment of the urgent needs of the people of the United States for library service in the field of education, economics, science, culture, and everyday living.

In considering the requirements for funds for fiscal year 1968 for the various acts with substantial library involvements, I should like to present a few facts regarding their main objectives, their accomplishments and needs and our recommendations regarding appropriations. In the matter of the appropriations, I would like to emphasize again that the amounts that are in the authorization, we consider as minimum amounts in order to accomplish the needs of the legislation.

LIBRARY SERVICES AND CONSTRUCTION ACT

The Library Services and Construction Act is intended to help the States to overcome the deficiencies in public library services under title I, and in public library construction under title II. It provides also for encouraging interlibrary cooperation of school, college, university, public, and special libraries and information centers in order to bring the most effective library service to the people under title III, and it gives financial assistance for library service in State institutions such as prisons, hospitals, and correctional schools under title IV-A, and extends and improves library service for the blind and physically handicapped under title IV-B.

We have for the record some data which I think you will find interesting.

Senator HILL. Yes.

Miss KRETTEK. For instance, 12 million people still have no local public library service in this country.

Senator HILL. You estimate that many today?

Miss KRETTEK. Yes, sir.

We have made tremendous progress since the act was first passed in 1956.

Senator HILL. I know you have, wonderful progress.

Miss KRETTEK. But we still haven't accomplished our goals. Of course, we keep getting more people in the United States.

Senator HILL. You can't imagine what a terrific struggle we had to pass the first Library Services Act. It involved only \$71½ million, as you remember. It took us about 5 years to pass that act.

Miss KRETTEK. I surely do. Without your good assistance, we never would have made it.

Senator HILL. That is the basis on which we have built, as you know.

Miss KRETTEK. And I sometimes think what would have happened to the educational program of this Nation if there hadn't been leaders with the vision of you and others who saw the need for and started that small rural library program, and this gave the States an opportunity to develop a program of library services to all their people. In some cases, they didn't even have a State library agency, and on the basis of that initial program, they have now got to the place where they are in a position to really begin to give good library service.

We sent a questionnaire, Senator, to the States, this last February, and on the basis of that questionnaire to the State agencies concerning their programs and plans under the Library Services Act, it is perfectly clear that they could use effectively the full amounts of funds authorized, and they are going to be handicapped in their program by the House reductions.

HOUSE ALLOWANCE

Senator HILL. The House cut you down some, didn't it?

Miss KRETTEK. Yes, sir. The House carried through the same amounts as are in the President's recommendations, so far as the LSCA is concerned. But in the original budget recommendation, there had been a definite cut, yes.

Senator HILL. A definite cut. Yes.

Miss KRETTEK. A table 2-A of the prepared statement shows the results of this questionnaire, and the amount of funds that are available for State and local matching, which I think is very important, as it indicates that the State and local communities are willing to carry their share in making good use of the Federal moneys that are available.

Senator HILL. On the whole, they are doing it, aren't they?

Miss KRETTEK. To a very good degree. There has been an excellent record, in terms of increasing amounts of State and local matching.

State library agencies estimate that if Federal funds for title II are cut back to \$27.185 million in fiscal year 1968, from \$40 million in fiscal year 1967, the number of projects that could be approved would drop from about 400 to 250.

COOPERATING LIBRARIES

Only a start has been made in setting up systems of cooperating libraries. State agencies reported that 64 title III interlibrary cooperative projects costing \$10.5 million are planned for fiscal year 1968. The largest group of projects were reported for reference and resource networks and special communications projects which will make available better reference and information services to millions of people.

LIBRARY SERVICE IN STATE INSTITUTIONS

Library service in State institutions and to the blind and physically handicapped is wholly inadequate in practically all the States. Twenty-nine State agencies report that over 525 State-supported prisons, hospitals, and other institutions would benefit from title IV-A projects costing \$5 million. About 365,000 prison inmates, hospital patients, juvenile delinquents, and others would benefit from library books and other services. Over 675,000 good books could be added and 280 persons hired to help run the libraries.

Thirty-two States reported that they have current plans for 53 title IV-B projects to help the handicapped who cannot use conventional library materials.

Senator HILL. Thirty-two of the States do?

Miss KRETTEK. Thirty-two States report that they have current plans for 53 title IV-B projects to aid the handicapped, who can't use conventional library materials.

I have an appendix A that is attached to the testimony, Senator, that I think you may want to consult later. It summarizes the activities in a few States, and this I would like to put into the record.

Senator HILL. All right, that is in your regular statement, isn't it?

Miss KRETTEK. Yes, sir.

Senator HILL. Fine.

Miss KRETTEK. And then we have an appendix B which shows the differences in amounts for each State, of the amounts authorized for each title of the Library Services Act, the budget recommendations which were accepted by the House, and the decreases in each State.

DECREASES FOR ALABAMA

The decrease for Alabama, for instance, is \$179,626 for title I, \$409,818 for title II, \$96,639 each for title III and IV-A and a decrease of \$48,140 for title IV-B.

And similar figures are there for each State.

Senator HILL. We will have that appear in full in the record.

ELEMENTARY AND SECONDARY EDUCATION ACT

Miss KRETTEK. Thank you, sir. In connection with title II of the Elementary and Second Education Act, it should be noted that minimum annual per pupil expenditure for school library books, excluding reference and periodicals, recommended by accepted national standards, is \$4 to \$6 per pupil. But average annual amounts spent for books in schools with libraries was only \$2.08 per pupil. Nationally accepted standards call for 10 books per pupil, but U.S. Office of Education data show only an average of 5.7 books per pupil.

The authorization for fiscal year 1968 is \$150 million, but the House allowance for title II is only \$104,457,000. This amount would provide approximately \$2 per pupil for school library resources, textbooks and other instructional materials for the 50,500,000 pupils in public and private schools, a sum far below the amount needed for library books alone. Attached is a table—appendix C—showing the amounts authorized for each State and the amounts allowed by the House bill.

The importance of school library resources is evidenced by the decisions of the States to allocate the major portion of their title II funds for school library materials during the brief existence of the legislation. We have had hundreds of letters from all over the country, showing how these funds have been used to improve the entire school program and the quality of education. In my prepared statement I have given just a few examples which I think you will find interesting.

Senator HILL. To improve the whole program?

Miss KRETTEK. Yes.

RECOMMENDATION

In view of the essentiality of the school program to the Nation, the American Library Association urges that the full authorization for the Elementary and Secondary Education Act be granted, including the \$150 million authorized for title II for fiscal year 1968.

You have some very good representatives here to speak for other programs, so I won't give details, but I would like to indicate our endorsement of certain other acts.

NATIONAL DEFENSE EDUCATION ACT

For instance, the National Defense Education Act is a program that has been of concern to us, and we feel that title III, providing the instructional equipment and material for 10 critical subject fields, has been of great value in improving educational programs in elementary and secondary schools. Therefore, in order to carry on without disruption a program of value to education, we recommend the appropriation for title III of the full authorization of the \$110 million.

HIGHER EDUCATION ACT

The Higher Education Act again is a program that we feel is of tremendous importance to the Nation, and we would like to speak particularly at this point in favor of title II, which provides grants to improve college libraries and the quality of the Nation's library service under Part A: College Library Resources, under Part B: Library Training and Research, and under Part C: Strengthening College and Research Library Resources.

Surveys have shown that 50 percent of our 4-year colleges and 82 percent of our 2-year institutions fall below the nationally accepted minimum standards for the total number of volumes in their libraries. The shortage of trained librarians is considerable.

I won't go into details about all of these points. Mr. Mumford will speak particularly on title II-C.

It has made progress so far. College and university libraries are essential to the educational, scientific, technological, and cultural needs of the Nation.

The urgency is so great we urge the appropriation of the full authorization of the \$72,770,000 for all parts of title II of the Higher Education Act.

HIGHER EDUCATION FACILITIES ACT

The Higher Education Facilities Act is another piece of legislation that has done a great deal for the furtherance of education, and we would like to urge appropriation of the full authorized amounts for this program.

MEDICAL LIBRARY ASSISTANCE ACT

The Medical Library Assistance Act is another piece of vital legislation, and we would urge that this committee consider the adequate funding of all parts of that act, which is so essential to the general health and welfare of the Nation.

INTERNATIONAL EDUCATION ACT

The International Education Act is another piece of legislation that we have followed with a great deal of interest. We think that there are tremendous possibilities here, and in view of the great significance of international understanding in these troubled times, we urge that the budget recommendation of \$36,525,000 be granted for fiscal year 1968. We regret that the House disallowed any funds for this.

Senator HILL. It didn't allow any at all?

Miss KRETTEK. No; no money was allowed for this important program.

Mr. Chairman, this is, in brief, a summary of our statement which we hope will give you justification for each of the appropriations involving libraries, public school, higher education, medicine, and international education. We appreciate the opportunity of presenting it to you, and hope you will be able to act favorably on the recommendations.

Senator HILL. Well, if we act favorably, are you going to get the House to agree with us?

Miss KRETTEK. We can certainly try.

Senator HILL. All right. We certainly appreciate your statement. You always bring us a mighty good statement, and we appreciate it very, very much.

STATEMENT OF DR. L. QUINCY MUMFORD, LIBRARIAN OF CONGRESS

ESTABLISHMENT OF LIBRARY OF CONGRESS AND SMITHSONIAN INSTITUTION

Senator HILL. Dr. Mumford. We are happy to have you here, sir. You may proceed, now.

Dr. MUMFORD. Thank you, Mr. Chairman, and I appreciate the opportunity to be here. I think you well know that the Library of Congress, because of its roles as the National Library, has been deeply interested in the health and welfare of this country's libraries.

Senator HILL. Let me ask you a question, Doctor. Refresh my recollection. How old is the Library of Congress?

Dr. MUMFORD. 167 years. It was established April 24, 1800.

Senator HILL. Did you ever read the debates on the establishment of the Smithsonian Institution? There was quite a question there, as I recall that debate, about whether or not—

Dr. MUMFORD. The Government would accept the Smithsonian bequest.

Senator HILL. That is right. And whether that would be tied in with the Library of Congress, or set up as a separate institute. A most interesting debate.

Dr. MUMFORD. I would say that each has grown into a great institution.

Senator HILL. They certainly have.

Dr. MUMFORD. Each has different functions, primarily.

Senator HILL. Primarily; yes.

CONGRESSIONAL SUPPORT OF LIBRARY MEASURES

Dr. MUMFORD. Because of the congressional support of several library measures for which funds are being requested, the public school, college, and university libraries have been able to meet more adequately the needs of their constituencies.

I believe I can speak for librarians in this country when I say that this support has put new blood in the library community and it is with a certain amount of pride that I can report that my colleagues in the profession have met the challenges you have given them. One only has

to look at the programs that the public, school, college, and university libraries are offering.

FUNDING REQUISITE

As is usually the case, however, so much more needs to be done, and serious gaps exist in library services in this Nation. For this reason I urge that the subcommittee grant adequate appropriations for libraries under the Library Services and Construction Act, Elementary and Secondary Education Act, and the Higher Education Act. We consider the programs authorized under these acts vital to the growth of libraries in the United States.

CENTRALIZED CATALOGING AND ACQUISITION PROGRAMS

The Library of Congress, as you know, is particularly interested in the centralized cataloging and acquisitions program authorized under title II-C of the Higher Education Act of 1965. The program is administered by the Library of Congress with funds appropriated to the Department of Health, Education, and Welfare for transfer to the Library by the Commissioner of Education.

HIGHER EDUCATION ACT

Title II-C of the Higher Education Act authorized an appropriation of \$5 million for fiscal year 1966; 6,315,000 for fiscal year 1967; and \$7,770,000 for fiscal year 1968. Only \$300,000 was appropriated late in fiscal year 1966 and only \$3 million for fiscal year 1967.

Senator HILL. That wasn't quite half of what was authorized, was it?

Dr. MUMFORD. No, sir; that is correct. It is not even one-third of the amount authorized. As you know, the House of Representatives has allowed \$4 million for fiscal year 1968. We strongly urge your subcommittee to consider the full appropriation of \$7,770,000 for fiscal year 1968. If the fiscal year 1968 budget is held at \$4 million, the Library of Congress will be unable to meet the needs of the U.S. libraries for the prompt receipt of catalog card copy as envisioned by the law.

Senator HILL. The \$4 million is a budget figure, isn't it?

Dr. MUMFORD. That was the request of the administration, and that was allowed by the House.

Senator HILL. Yes.

PROGRAM DEVELOPMENT

Dr. MUMFORD. I would like to summarize briefly the development of this program. Because research libraries in the United States could not get from the Library of Congress—at least not fast enough to serve their needs—catalog cards for a considerable portion of the foreign books they acquired, they were forced to try to catalog them for themselves. This led not only to competition for scarce catalogers but to expensive and wasteful duplication of effort.

When the Higher Education Act was before the Congress, the research librarians, with the full support of the Library of Congress,

presented testimony to the Congress, pointing out that the cost of cataloging a book was so high—often more than the price of the book—that the universities were wasting millions of dollars in a duplication of effort, and that the scarcity of catalogers was making the task of getting books, especially foreign titles, to the shelves for prompt use next to impossible. A centralized agency to do this cataloging seemed imperative if the money provided for in title II-A of the Higher Education Act was to be properly utilized. With my concurrence, the research librarians requested that funds be appropriated for transfer to the Library of Congress in order that it could serve as such an agency. The Library of Congress was already cataloging promptly and providing printed catalog cards for about 50 percent of the materials being acquired by these research libraries. Therefore, it was the logical place for such an operation.

In addition, the Library's machinery—to say nothing of its international connections and reputation—for acquiring foreign materials was the most effective available. In recognition of the need for such a program—called the National Program for Acquisitions and Cataloging or NPAC-EN-PAC—to suggest the impact we hoped and expected it to have—title II-C authorizing it was added to the Higher Education Act of 1965. I want to emphasize that the program is designed to speed up the flow of catalog information to the college and university libraries of the country so that they can make available, without undue delay, materials sorely needed by the academic community for teaching and research. It is, therefore, a program for the primary benefit of higher education. The Library of Congress and its users, of course, also benefit through supplements to our acquisitions and from the prompt cataloging of more materials.

Because of detailed advance planning, the Library was ready to implement this program as soon as the first funds became available, less than a year ago. Because not even the Library of Congress could hope to obtain enough catalogers with the necessary linguistic and technical ability to do the original cataloging of all the foreign books needed by American college or university libraries, a feature of the program as planned by the Library of Congress was shared cataloging on an international basis. Many countries describe their own currently published materials in national bibliographies and this descriptive cataloging is of a high standard. It therefore seemed desirable to try to work out arrangements with these national bibliographies to obtain this information for incorporation in the Library of Congress catalog card copy, and to obtain it quickly enough to meet the Library of Congress responsibility to the research community.

The reaction of the directors of the national libraries and the national bibliographies abroad was enthusiastic, and to date contracts have been entered into with 16 national bibliographies for the Library of Congress to receive a printer's copy well in advance of publication in the country of origin in order that the Library of Congress may have printed catalog cards available by the time the research libraries acquire the book itself. Small offices to handle this work, staffed with local catalogers and usually headed by one American, have been established in London, Paris, Oslo, Weisbaden, Vienna, The

Hague, and Belgrade. These offices provide bibliographic coverage of the publishing output of Sweden, Denmark, Switzerland, and Belgium as well as of the countries in which they are located. In addition, regional acquisitions offices are operating in Nairobi, Kenya, and Rio de Janeiro, Brazil, to obtain materials not readily available through normal trade channels.

The early results of this program have been acclaimed by librarians in this country and abroad. Sir Frank Francis, the Director of the British Museum, speaking at the 1966 meeting of the International Federation of Library Associations, said that he was "electrified" at the prospect the program opened up and that "we were at last on the edge of the most important breakthrough in the realm of information since the elaboration of rules for cataloging made clear the basis on which cataloging procedures should work."

Senator HILL. A pretty good statement, wasn't it? A pretty strong statement.

ENTHUSIASM OF EUROPEAN LIBRARIES

Dr. MUMFORD. He has been extremely enthusiastic about this program, as have many other directors of national libraries in Europe. They see in it a tool of mutual benefit to them as well as to American librarians.

Senator HILL. Yes.

Dr. MUMFORD. And they have extended very warm and helpful cooperation.

Senator HILL. They realize we all live in one world, now, don't they?

Dr. MUMFORD. Yes, sir; that is right. At another time, I would be very happy to tell the chairman about the kind of reception I received in Poland and Russia on this cataloging program, as well as at a meeting in Vienna with representatives of six East European countries.

A preliminary survey made by the Association of Research Libraries has shown from a 10- to 50-percent increase in the availability and utilization by various libraries of Library of Congress catalog cards for foreign materials.

Senator HILL. That is quite an increase, isn't it?

Dr. MUMFORD. Yes, sir. We found very gratifying the impact that this program has already had, but we have only done part of the job that the law envisioned was to be done.

This program has greatly speeded up cataloging and the availability of research materials.

REACTIONS OF COLLEGE AND UNIVERSITY LIBRARIES

If you will allow me, I would like to quote just some of the reactions of college and university librarians.

One said:

The success of the Shared Cataloging Program has had two important benefits for our library:

(1) We are saving money on staff because we need fewer professional catalogers than we would otherwise require. Using copy now supplied by the Library of Congress, staff members with on-the-job training can now do the work

which formerly required the skill of a graduate librarian. Economies in personnel are already apparent in our Catalog Department, and we expect them to increase. Our savings this year will amount to somewhere between \$10,000 and \$15,000.

(2) We are able to make currently published books available to our readers much more promptly. Formerly, we either had to catalog the books ourselves or wait many weeks after publication for Library of Congress catalog cards to arrive. The speed of cataloging under the new Program is already impressive, and I assume it will increase.

CATALOGING SAVINGS

Senator HILL. You are increasing, aren't you?

Dr. MUMFORD. Yes, sir; but there is a limit to how much we can increase it with the present funding.

Senator HILL. Yes, of course; funding goes to that very question.

Dr. MUMFORD. We have reached the point where we can't expand it further, as I will indicate in the areas that we need to go into.

The director of a medium-sized university library estimates that the savings in cataloging materials from countries where the title II-C program is in effect, projected over a period of 1 year, will amount to nearly \$20,000. He states that with Library of Congress catalog card copy available, the savings in cataloging a single title is more than \$5.

Another librarian said:

The benefits of this program rest not just in greatly improved utilization of this countries' limited specialized manpower, but absolute benefits that can frequently not be secured in any other way, for example, in the cataloging of material in very difficult foreign languages where local capability simply does not exist. There are also benefits to be had in acquisitions and book selection from an enlarged bibliographic tool in the form of Library of Congress cards.

The benefits to libraries—and, more significantly, the persons they serve—during this first year of operation under the severely reduced budget for this program may not seem profound, but they are already evident and are expected to increase as the program becomes more comprehensive when the Library of Congress becomes fully staffed. The University of . . . noted that the percentage of titles for which Library of Congress cataloging copy is available at the time of cataloging has risen from last fiscal year's 53 percent to roughly 63 percent at the present time. We attribute this improvement to the Title II program.

I believe that these statements speak for themselves as to the importance of this program to the research community. To move ahead as we have planned and as we are ready to do, however, requires adequate funding.

POSSIBLE PROGRAM DEFERRALS

We have made a very good beginning with most gratifying results as the research community has attested, but unless the full amount is appropriated, the Library of Congress will not be able to carry out those programs that are currently under negotiation with the libraries of Eastern European countries, we will have to defer our plans for expansion of the program to Asia, and we will not be able to expand our acquisitions efforts in those areas of the world where the export book trade is not well organized or is nonexistent. I might add that we recently had very strong representations from the scholars of the Far Eastern countries.

Senator HILL. The Far East, have you?

NONRECEIPT OF SIGNIFICANT RESEARCH PUBLICATIONS

Dr. MUMFORD. Yes; to extend this program to Japan and to Chinese material that may be acquired in Hong Kong or elsewhere.

The needless waste, delay, and duplication in cataloging which has been going on will continue and university libraries will have to spend countless unnecessary dollars for cataloging unless the Library of Congress is able to fully implement the program. One important fact that this program has demonstrated to the research community is that there are many areas of the world from which the Library of Congress and other research libraries have not been receiving all of the significant research materials that are published. The Congress and other agencies in the Government, as well as students and scholars, are suffering from this gap in acquisitions.

Senator HILL. Is that due to lack of funds, primarily?

Dr. MUMFORD. Yes, and because there is no well-developed book trade in many of the developing countries, Senator, it is impossible for the Library of Congress or a university library to deal with a dealer through normal channels, and be able to get publication.

Many of them issue it in very small editions, and if they are not obtained quickly, they are exhausted. They are not available, by the time the university or Library of Congress learns about them.

Senator HILL. Yes.

Dr. MUMFORD. Despite the current budget stringencies that exist, I feel that the amount of money is small when one compares it with the countless dollars being spent by universities in attempting to catalog the same foreign language materials.

This program would naturally enhance the value of the Federal moneys being appropriated under title II-A for library resources.

In addition, you cannot place a price tag on the valuable material that would be received in this country for research and consultation.

I respectfully request that your subcommittee consider and approve this request for the full \$7,770,000 authorized for fiscal 1968 for title II-C of the Higher Education Act.

Thank you for this opportunity to present the case for the national program for acquisitions and cataloging. I will be happy to answer any questions you may have.

Senator HILL. We thank you very much. This is certainly a most interesting program, Doctor.

Dr. MUMFORD. I think it is one of the most significant library programs that has been inaugurated.

Senator HILL. One we hadn't given thought to, up to a few years ago, had we?

Dr. MUMFORD. Centralized cataloging has existed to a degree since 1901, when the Library of Congress began distributing the cards which it catalogs and prints, but for foreign materials, and across the board, we have thought about it, but we could find no feasible means of implementing it.

It did require some money to implement it. It is the most logical thing in the world to catalog a book in one place, and not be cataloging it in a dozen, or 15 or 20, 50, or 100 places, throughout the country. It is a vital key to the effective utilization of Federal assistance to college and university libraries as provided for in the Higher Education Act.

Senator HILL. Well, you have brought us a most interesting and informative statement, Doctor, and we certainly appreciate it.

Dr. MUMFORD. Thank you very much, Mr. Chairman.

Senator HILL. When are you leaving for California?

Dr. MUMFORD. This afternoon.

Senator HILL. We hope you have a good trip.

Dr. MUMFORD. Thank you.

Senator HILL. We certainly appreciate your statement, Doctor. Thank you very, very much.

STATEMENT OF DR. WILLIAM LIKOFF, OF PHILADELPHIA, PRESIDENT OF THE AMERICAN COLLEGE OF CARDIOLOGY; ACCOMPANIED BY WILLIAM NELLIGAN, EXECUTIVE DIRECTOR OF THE AMERICAN COLLEGE OF CARDIOLOGY; AND DR. ELIOT CORDAY, PAST PRESIDENT OF THE AMERICAN COLLEGE OF CARDIOLOGY, CHAIRMAN OF THE LIAISON COMMITTEE WITH CONGRESS AND THE SURGEON GENERAL

PUBLIC HEALTH SERVICE BUDGET REQUEST

Senator HILL. Now, Dr. Likoff. Doctor, we are glad to have you here with us.

Dr. LIKOFF. Mr. Chairman, I am William Likoff, professor of medicine at Hahnemann Medical College in Philadelphia, and president of the American College of Cardiology.

With me are Mr. William Nelligan, who is executive director of the American College of Cardiology, and to my right, Dr. Eliot Corday, who you know is past president of the American College of Cardiology, and Chairman of the Liaison Committee with Congress and the Surgeon General.

Senator HILL. We are glad to have all you gentlemen here with us.

Dr. LIKOFF. Thank you, sir, I acknowledge with gratitude the privilege of appearing before this committee and presenting the views of the American College of Cardiology regarding the Public Health Service budget now under your review.

HEART DISEASE

The matter which moves this testimony is the extent to which talent and competence in the contest against heart disease will be adversely influenced if certain structured allocations are not altered.

This committee is acutely aware, I know, that heart disease is the primary health problem of our time, with morbidity and mortality rates far exceeding any other disease. You, Mr. Chairman, have been the author and architect of health programs which have strongly supported research and education in an effort to modify that fact. Over the years, specific Federal resources have created and maintained health agencies such as the National Heart Institute, and the National Center for Chronic Disease Control, which have stimulated and enlarged the efforts of all of the life sciences involved in diseases of the heart and circulatory system.

An analysis of the activity of those agencies reveals gratifying accomplishments in supporting basic research, training personnel, stimulating clinical inquiry, exploiting creativity for the benefit of the public, and converting knowledge to practical service.

BUDGET REQUEST INADEQUACY

Included in the current budget requests are stipulated items for the National Heart Institute and the National Center for Chronic Disease Control, which should be evaluated only in the environment of these agencies' past deeds and their present obligations. The American College of Cardiology regrets that the budget request for the National Heart Institute which was approved by the House of Representatives embodies only a 2-percent increase over the current fiscal year.

Senator HILL. Not much increase, it is?

Dr. LIKOFF. No, sir. When one reviews the increases of other Institutes, we find that the National Heart Institute is low man on the totem pole, the range being from 2 to 11 percent.

This increase is one-fifth of that granted to the Institute of Neurologic Diseases, and is barely sufficient to meet the contemplated increases in the administrative costs of the overall program.

Two percent, sir, may not represent retrenchment, but it can't furnish a dynamic engagement of a disease problem, which in incapacitation and death enlarges enormously from year to year. The failure to provide additional funds for the National Heart Institute will have a number of specific repercussions, both in special and in general projects.

MYOCARDIAL INFARCTION STUDY CENTERS

The organization of myocardial infarction study facilities designed to investigate the functional responses to acute heart attacks is a primary example.

Regretfully, our understanding of the complex insults to body economy which evolve with the closure of a coronary blood vessel and the subsequent death of heart muscle is poorly understood. Definition of this response is required if treatment is to be successful.

The National Heart Institute has suggested that specific study centers be established in a number of qualified institutions to clarify the problem.

These study centers are costly to organize and operate, and from contemplation of the budget, it is unlikely that the necessary number of units will be put into operation.

Senator HILL. Well, the budget this year allowed you very little over last year, didn't it?

Dr. LIKOFF. That is correct; yes, sir.

Senator HILL. Very little.

RESEARCH GRANTS

Dr. LIKOFF. In review of the research projects funded by the National Heart Institute, it has been argued that sufficient funds are available to satisfy the requirements of our most capable scientists.

This is hardly accurate, because superlative research grant projects, approximately 250 of them, meeting every requirement of the Advisory Council, are not being funded.

They embrace inquiries into the causes and treatments of such vital health problems as hypertension, stroke, and the hardening of the arteries.

Curiously enough, Mr. Chairman, requests for funds made by scientists to the National Heart Institute reflect the basic philosophy of your budget. That appropriations are being barely maintained or cut back aborts requests before they are even born. There is an undeniable feeling in the scientific community at present that expanded research grant project and training program requests are not going to be honored during this forthcoming year, and the decision to retrench, unfortunately, is being made all along the frontier of medicine.

The inability to fund all of the research projects held worthy by the Advisory Council of the National Heart Institute and the failure to provide funds for the expansion not only of basic research but of graduate training programs and research and training centers is in effect an expression of satisfaction with the present maturity of scientific knowledge.

Frankly, the state of knowledge concerning diseases of the heart does not support that view. It is pertinent to reflect that a major default in heart disease is not the failure to apply facts, but the lack of facts to apply.

HEART DISEASE CONTROL

The American College of Cardiology regrets the failure to provide the heart disease control program of the National Center for Chronic Disease Control sufficient funds to carry out its full purpose and dedication. As the committee so clearly recognizes, the Heart Disease Control Program is a liaison agency, charged with the responsibility of discovering how basic advances in research can be converted to practical usefulness for the public at large.

For example, it has been demonstrated that coronary care units materially reduce the mortality attending an acute myocardial infarction. This information has been provided by careful basic and clinical investigation. It is now necessary to extend the development and operation of coronary care units to all community hospitals throughout the country.

I might say parenthetically, Mr. Chairman, we are all most grateful to you for your interest in this program last year. We are grateful to the Heart Disease Control Program for its lead in inquiry into the methods whereby this can be accomplished. We believe a minimum of an additional million dollars is required to further this program which in the opinion of all physicians is capable of materially reducing the death rate of an acute coronary occlusion below the present inexcusable 35 percent.

NATIONAL CONFERENCE REVIEWING CORONARY CASE UNITS

It is interesting also to reflect that beginning tomorrow morning, sponsored by the heart disease control program, a national conference reviewing coronary care units will be held in this city, and cosponsored by the American College of Cardiology and the American Heart Association. Experts from all over the country are going to gather to discuss this problem.

Adequate construction, trained personnel, and knowledge of instrumentation is required for coronary units to be effective. The problem of inquiring into the manner in which these units can be made available to community hospitals in general and operated effectively is the responsibility of the Heart Disease Control Program and it has to this point more than demonstrated its abilities.

In the current budget, though, Heart Disease Control is being denied the funds necessary to continue this inquiry, research into community hypertensive surveys and efforts which are most urgently required for the development of automatic data processing computer centers for electrocardiograms and heart sounds.

If perfected and successfully introduced to the medical community, accurate electrocardiographic and other medical signal interpretation by computers will supplant human error, and the time spent by the physician in routine technical tasks will be significantly reduced.

ROLE OF EXERCISE IN HEART DISEASE

The Heart Disease Control program is also requiring additional support to investigate the role of exercise in heart disease. It is still conjectural, Mr. Chairman, whether conditioning prolongs the life of a cardiac patient, or merely gets him in better health until he must accept the immovable advent of death.

The community hypertensive control survey, a computerized data processing center and the exercise investigation require addition of over \$3 million to the budget now before you.

The medical community at large is extremely sensitive to the limitations within which this Committee must function.

As the spokesman for the American College of Cardiology, I assure you that our organization supports sensible appropriations for effective endeavors.

Basic research is the foundation of this effort. Clinical investigation exploits the practicality of the theoretical concept. Community programs extend the results of clinical investigation to the field of public health, and finally, broad social programs bring the thoroughly proven concept to the home of every American. These are interrelated, not competitive activities.

BUDGET REQUEST INADEQUACY

The current budget compromises basic research, seriously impedes the collateral structure and program in health, and furthermore, interrupts the trial period in which community projects are being examined for their critical application to the purposes of social benefit.

I most sincerely appeal for a restudy of the appropriations cited. I am grateful for this opportunity to express these views.

EFFECT OF 1967 APPROPRIATION

Senator HILL. Anything you gentlemen would like to add?

Dr. CORDAY. I would just like to say, sir, the American College of Cardiology recognizes the benefits to the Nation's health provided by the additional appropriation last year to the heart disease control program, which I think was the sum of \$1 million. This has stimulated the whole effort in coronary care across the Nation, and we estimate,

sir, that probably 50,000 lives will be saved each year with hearts that are just too good to die if we set these units up across the Nation.

MEETING TO DISCUSS GUIDELINES

Tomorrow morning, sir, the American Heart Association, the American College of Cardiology, the Heart Disease Control Program of the U.S. Public Health, are sponsoring a meeting in which about 700 volunteers, paying their own expenses, from every State of this Nation, will come together to discuss guidelines for coronary care.

This field is moving so rapidly, sir, that it is necessary to sit down and consolidate our opinions. One of the problems is the small hospital below 150 beds that takes care of the bulk of coronary patients in this Nation. What can we do to make it practical there?

NEW DEVELOPMENTS

Also, sir, since we discussed this with you last year, there have been new developments in the field. Before, we would anticipate that 12 coronary patients out of 100 would develop an apparent death, their heart would stop. We now know that we can save 70 percent of those whose heart stops primarily due to myocardial infarction.

This last year Lown and Killip have demonstrated that they can prevent cardiac arrest, if, as soon as they see irritability of the heart they start administering an antiarrhythmic drug. They have had only two cases die out of 300, sir, which is about 1 percent.

In other words, coronary care units were first designed to put out the fire, but now that we are going into the prevention stage, fire preventions are going to prevent the cardiac arrest. It has opened up—it is moving so rapidly, sir, that in our deliberation in the next 2 days, we will try and consolidate the benefits derived from one another's experiences.

We are very grateful for the appropriation last year which will benefit the Nation's health considerably, sir.

JOHN E. FOGARTY INTERNATIONAL CENTER

Senator HILL. Anything you would like to add Mr. Nelligan?

Mr. NELLIGAN. Just one brief mention, sir, about the John E. Fogarty International Center. The college would like to place in the record its complete support for such a center.

HOUSE ALLOWANCE FOR PLANNING FUNDS

We would very much urge that your committee reexamine the appropriations that were approved by the House of Representatives, in terms of planning funds. I believe a half million dollars was voted by the House of Representatives.

It would be our hope that you might be able to fund the original estimate of Dr. Shannon, \$820,000 for the planning funds for this center inasmuch as it has been indicated many times that the ultimate funds for construction are voted in relationship to the planning funds. We think this center is needed; it will be used. We know that it had your initial endorsement in the 85th and 86th Congresses.

Dr. CORDAY. This is a small token, sir, for the great contribution of our beloved Congressman Fogarty, for what he has done for the health of the Nation, and the health of the world.

In turn, sir, it will benefit further the health of the Nation.

Senator HILL. We suffered a terrible loss when he left us.

Dr. CORDAY. Terrible loss; terrible.

Senator HILL. And I don't know of any more fitting thing that Congress can do to pay tribute to the memory of John Fogarty and all that he did for the health of our people.

Dr. CORDAY. And, sir, it will be a living memory.

Senator HILL. Yes, it will be. You gentlemen, of course, remember our old friend, Ed Dempsey, who was here as Assistant Secretary of Health, Education, and Welfare for Health and Science. As you know, he left, and he went to the College of Physicians and Surgeons, Columbia University, as head of the department of anatomy there. He had been there a very short time when I had a letter from him, in which he said he had had a cardiac attack and, but for the fact that he was right there where they had a cardiac care unit, he very likely wouldn't have been able to write the letter, because he very likely would have left this world, you see.

Just illustrating what you gentlemen have said here.

COMMUNICATION TO GRASSROOTS OF RESEARCH IMPERATIVE

Let me say one thing to you, and that is this: I wish it were possible for a great organization like the American College of Cardiology to be able to get this message to what I call the grassroots. The people back home, you see—the people who are, after all, responsible for the kind of government we have, what kind of appropriations we make, what we do here. To let them know just what this research money means, what you have done with it up to date, what you plan and expect to be able to obtain from it in the future.

Dr. CORDAY. Sir, a small demonstration of that, and this should be placed in the record, is the benefits relative to polio, and the infectious diseases. There have been such rapid changes made, through the appropriations funded by this committee in the past years, that have benefited the whole world. We no longer see diphtheria and these dreaded diseases.

Senator HILL. Yes; these dreaded diseases. I had typhoid fever once. Now I understand that many doctors go through medical school, graduate, and never even see a case of typhoid fever.

Dr. CORDAY. This is true. I confess that I have never seen a case of typhoid fever, and I have been practicing medicine for close to 30 years.

Senator HILL. You haven't seen a case yet?

Dr. CORDAY. No, sir.

Senator HILL. If I had known that, I would have sent you a telegram to come down to Montgomery and see me, when I had it.

Well, it is a funny thing taking about that now. I not only had typhoid fever, but my wife, when she was a very young child, had typhoid fever, her mother had typhoid fever, and her father died

with typhoid fever. He died of typhoid fever, but I think his doctor perhaps didn't function too well. He gave him a dose of calomel.

Dr. CORDAY. That will rupture the gut.

Senator HILL. Sure; that is what it will do. I remember when my father was president of the Alabama State Medical Society he established the Jerome Cochran lecture. Jerome Cochran was the first State public health officer of Alabama, a very outstanding, wonderful man, and, after he had established this lecture, a friend of his who was elected president asked him to deliver the Jerome Cochran lecture at one of the annual meetings of the society, and he had for his subject the surgical complications of typhoid fever.

You don't have any typhoid fever now, so you have no surgical complications, but what we need to do is to get this message to the American people, you see, let them know the terrific dividends that will come back from these appropriations, from these expenditures of Federal funds.

Dr. CORDAY. That is right, sir; that is so true, sir. We can put a price on the benefits of coronary care, if further funds are provided, possibly, \$2 million to \$5 million funds, we estimate we will be able to save an additional 50,000 lives with hearts that are just too good to die, such as that you mentioned, Dr. Dempsey.

Peter Sellers was a case——

Senator HILL. Yes, that is right. Same case.

Dr. CORDAY. His heart stopped eight times. He had an apparent death eight times, sir, and what was required to save him represented a small price for a human life. With the funds that were provided last year, 12 coronary care teaching centers have been set up across the Nation. This is a very impressive training program. One thousand nurses will be trained in coronary care in tasks that were formerly performed only by the specialists, but we have to train 44,000 nurses across the Nation to staff the 7,000 hospitals, sir, so it requires further support from Federal agencies, sir.

Senator HILL. It does, indeed. I made a television appearance with Dr. Stewart and Secretary Wirtz just yesterday morning, in which we were urging some 125,000 trained, experienced nurses, who have left the profession, to come back into the profession.

Dr. CORDAY. Be reattracted, and they can be, too.

Senator HILL. Yes, sir, they can be; can they not, Doctor?

Dr. CORDAY. Absolutely.

Senator HILL. I urge you again to think in terms of getting this message to the American people.

Dr. LIKOFF. Yes, sir.

VOLUNTARY HEALTH ORGANIZATIONS

Senator HILL. And let me say another thing, too. I have great appreciation of many of our voluntary health organizations, but they have to raise their funds from voluntary contributions, so, naturally, they don't talk too much about what the Government is putting up.

Their emphasis has to be on these voluntary contributions. You see what I mean?

Dr. LIKOFF. I think it is common recognition that this is a partnership. And I think people are very willing to accept this, too.

Senator HILL. It should be a partnership deal, but I don't think the Federal Government's partnership is known to the people. The message of it, the results of it, and the promise of it.

Dr. CORDAY. You are absolutely right.

Mr. NELLIGAN. We can be salesmen for this.

Senator HILL. That is what I am trying to enlist you as right now; salesmen.

Dr. LIKOFF. You have just enlisted the American College of Cardiology.

Mr. NELLIGAN. Through each of our college Governors, we have representatives in each of the 50 States, and I think through these Governors, we can carry this message to the people.

Dr. LIKOFF. We are not a fundraising organization.

Senator HILL. I understand that, sir. You don't have to worry about that, you see. Now if you were a fundraising organization, you have problems. They would say, "Listen, you want me to make a voluntary contribution, when I am also paying taxes for this information." You see what I mean? But you don't have that problem at all.

Mr. NELLIGAN. We will accept this challenge.

Senator HILL. All right, I am giving you a challenge, young man.

All right, by the way, how is Dr. Hurd these days?

Dr. LIKOFF. He is fine, and we have Dr. Nichols at our institution as well—Henry Nichols.

Senator HILL. Fine, tell both I asked about them, and present my compliments to them.

Dr. LIKOFF. Fine, thank you very much.

Senator HILL. We certainly appreciate your fine testimony this morning.

Dr. LIKOFF. Thank you.

Senator HILL. Thank you very much.

STATEMENT OF LOUIS T. BENEZET, PRESIDENT, CLAREMONT GRADUATE SCHOOL AND UNIVERSITY CENTER, REPRESENTING THE AMERICAN COUNCIL ON EDUCATION

PREPARED STATEMENT

Senator HILL. Dr. Louis T. Benezet.

Mr. BENEZET. I have a statement which I will submit and summarize.

Senator HILL. Your statement will appear in full in the record.

(The statement follows:)

Mr. Chairman and members of the subcommittee, I am Louis T. Benezet, president of the Claremont Graduate School and University Center. I am appearing before you as a member of the board of directors and past chairman of the American Council on Education. The views I wish to present represent the position of the Council as well as other educational organizations concerned with higher education in this country. The Council now has a membership of 1,261 colleges and universities and 239 educational organizations. We are, therefore, in a unique position to address ourselves to the needs of the higher education community as a whole. I am proud to be able to say that in this testimony we are being joined by the Association of American Colleges, the Association for Higher Education, the Association of State Colleges and Universities, and

the National Association of State Universities and Land Grant Colleges. This will give you some idea of the consensus that exists in higher education on the matters before you.

I am appearing before you today to discuss with you certain aspects of the Administration's appropriation requests which give us considerable concern. Let me say at the outset that we are not unaware of the heavy pressures on the Budget occasioned by the situation in Vietnam. We know it is the duty of this committee and the other appropriation subcommittees to balance resources against the military and civilian needs of the nation. Nevertheless, we feel it our duty to call to your attention certain areas of particularly critical shortage.

To put it another way, we believe we should share with you our sense of priorities as far as higher education is concerned. Indeed we believe that higher education itself should have high priority in the investment of public funds. In a paper published last January entitled *The Federal Investment in Higher Education: The Need for a Sustained Commitment*, the American Council stated:

In times of crisis it may be possible to postpone or slow down programs which, while highly desirable, are not vital to the Nation's welfare. But the duties that higher education must perform cannot be set aside. Young people must be taught; manpower must be trained; faculties must be kept intact; answers to complex problems must be found. If higher education is to plan efficiently and accomplish its tasks, it must count on a steady flow of support. The fitful turning on and off of a faucet is not a method of economy; it is a guarantee of waste, both in dollars and in human resources. . . . It has been apparent for almost two decades that one of higher education's critical problems is to expand rapidly enough to meet the pressure of numbers. Every projection made in the past has underestimated the number of young people who would seek education beyond the high school. Even more grave is the underestimation of the number of years of education required by our increasingly complex society. Graduate and other postbaccalaureate schools are the most rapidly growing segment of higher education, and there is no likelihood that such expansion can or should be reversed. Indeed, in some areas, such as medicine and health-related disciplines, the gap between demand and capacity to meet it is growing disastrously.

Our primary concern, as it has been the concern of the Congress for almost ten years, is the increase in the number of young people who will not only be seeking but will require a college education if they are to lead productive lives and contribute their full potential to the strength of the nation. A study conducted under Council auspices and completed early this year indicates that we may expect an enrollment increase of just over 5 million students to bring us a total enrollment of 10 million by 1974. Because of the tendency for more and more students to engage in full time rather than part time study, we estimate that 3,750,000 of this increase will be full time students.

We recognize that Office of Education projections set the figure somewhat lower. One projection by the Office indicates a total enrollment of 8.7 million in 1974 and another a total enrollment of 9.1 million by that date. We would point out, however, that the Office has consistently underestimated enrollment growth in the past—one year by as much as 19 per cent. We are confident that our own projections are conservative. Furthermore, the encouragement given to veterans to go on to higher education or resume their education under the benefits of the new G.I. bill will certainly stimulate additional enrollment.

Clearly then, our priorities are set for us. There is no way in the world for us to take care of these increased numbers unless we have buildings in which to teach and teachers to meet classes. Our own estimate is that additional academic plant at a rate of at least \$3 billion per year must be provided in the coming decade just to take care of increased numbers. This figure does not provide for any replacement of existing obsolete and obsolescent facilities. It is new construction. Obviously, the Federal Government cannot be expected to underwrite this whole program. We must continue to rely heavily on state support, on private and corporate philanthropy, and other sources of revenue. But we should point out that the appropriation request (\$640 million) for the Higher Education Facilities Act now before you would provide for only approximately 20 per cent of the need. This is against an authorization of \$1.248 billion in the Facilities Act for FY 1968. What concerns us even more is that the appropriation request is \$73 million below the funds actually appropriated for the current fiscal year. The reduction amounts to \$63 million for undergraduate facilities, \$10 million for graduate facilities, and presumably the same level of activity for

facilities loans as was carried on this year, although no new appropriations are being requested. In short, the level of construction projected for FY 1968 is such that the outside observer would conclude that the situation is less acute and that we are over the hump. We believe that quite the contrary is the case, and we respectfully urge that this subcommittee increase the appropriation to something more nearly approximating the authorization of \$1.248 billion.

Our second area of major concern is the supply of teachers who will be required to instruct the increased number of students. At the moment the principal Federal program that addresses itself to this need is Title IV of the National Defense Education Act.

The Administration has requested \$96.6 million to fund this program for the coming year. We are advised that this will provide fewer new fellowships in FY 1968 than were provided during the current year—in other words, something less than 6,000 new fellowships. The authorization for this year provides for 7,500 new fellowships. To fund the full authorization of 7,500 new fellowships would require an additional appropriation of only \$10 million, which could result in adding 1,500 additional teachers to college faculties four to five years hence. We hope this subcommittee will give careful attention to the possibility of increasing the appropriation by that amount.

We come next to our third area of major concern, and this is to provide adequate funds for promising but needy students who are in all respects qualified and motivated to go on to higher education, but who lack the resources to pay for it. The Congress has provided a triple mechanism for meeting these needs in the form of grants, loans, and work opportunities.

The Administration has proposed that the appropriation for grants be \$159.6 million; for jobs (the so-called Work Study Program) \$139.9 million; and for loans under the National Defense Education Act, \$190 million. Our analysis suggests that the request for grants would just about meet the need, and we support it. However, applications for work study funds, even after they have been carefully analyzed by panels in all regions of the country and been approved for reasonableness, total \$158 million. This is well below the authorization of \$200 million. We urge that the appropriation be increased to \$158 million in order to meet the demonstrated need.

An even more serious situation prevails in the NDEA loan program. The authorized amount available for this program is \$225 million for FY 1968. When the institutions participating in the program filed applications for funds, the total requested proved to be \$243.1 million. Again these applications were reviewed in all regions of the country and were pared down to \$230.2 million. It was the judgment of the panels reviewing the applications that they could not reasonably be cut further. Thus, if only \$190 million is appropriated, there will be a shortage of over \$40 million.

What makes this situation particularly critical is that the shortage will fall unevenly on the states. Because of the distribution formula, some states will receive 100 cents on the dollar of the approved requests. Other states—and they are generally those with the largest percentage of needy students—will receive as little as 60 cents on the dollar. We recognize that there cannot be appropriated for the program the full \$230 million needed, but we do urge that there be an appropriation of \$225 million, which is the amount authorized for FY 1968.

Obviously, we wish that there could be more money made available for all of the programs which the Congress has enacted in the last several years. We are enthusiastic about the many new opportunities that this legislation provides for higher education to serve the needs of the nation. We would view it as little short of tragic if cuts were made in the austerity funding that the Administration proposes to provide for these new programs. But in these areas we do not feel justified in urging increases over what the Administration has proposed. We have tried, rather, to highlight those areas which are of such critical importance that we believe the commitments that the Government and higher education have made to students now in high school or the armed services cannot be fulfilled unless additional sums are provided.

Let me proceed now, Mr. Chairman, to some comments on the appropriations for HEW as they have passed the House.

The failure of the House to vote funds for the International Education Act of 1966 has disappointed and puzzled the academic community. We strongly supported the authorizing legislation over a year ago. We did so because we believe its intent—to strengthen our internal resources in international affairs—is clearly

in the public interest. We can only conclude that the House action this year resulted from a misconception about the Act's intent—perhaps confusing it with further underwriting of overseas educational or "foreign aid" programs. The latter are no part of its purpose.

Last year, the Senate Committee on Labor and Public Welfare directed exhaustive questioning to the Department of State, the Department of Health, Education and Welfare, and public witnesses to establish and clarify the intent. Rarely has an education bill been subjected to more intensive study. It seems to us significant, therefore, that the Committee reported the bill unanimously and that the Senate passed it with virtually no opposition. We believe that this favorable action resulted in no small measure from Senate insistence upon establishing the bill's clear purpose—to increase our people's literacy in world affairs, particularly in non-Western cultures. It would indeed be ironic if the necessary appropriations were denied now because of current misunderstandings of purpose.

It takes time to build added competence into the educational resource. In the year since the authorization passed, our colleges and universities have made major planning investments, with the assistance and encouragement of the Department of Health, Education and Welfare and the national education associations, so that they might fully meet the intent of the Act once appropriations became available. Baseline studies of national needs have been carefully drawn up. We are therefore confident that solid groundwork has been laid for the wise investment of the modest funds requested.

We do not believe that further time should be lost in getting this critical program underway. Each day's news further attests to America's need for broadened and deepened understanding of the non-Western cultures in particular. We believe we must get on with the job and strongly recommend that the full amount of \$20.8 million requested by the Administration be appropriated.

Since we have already commented on the foreseeable acute shortage of college teachers, it is not surprising that we view with the greatest distress the proposed severe reduction in the NDEA fellowship program. In view of the commitment this Nation has made to higher education and our promise to the young people of America, including those now serving in Vietnam, that an opportunity for higher education will be available to them, we think it reasonable to urge an appropriation of \$10 million *above* the Administration's request for the funding of this program. This would bring the number of new fellowships close to the 7,500 level authorized by the Congress. To *reduce* the number of new fellowships from this year's level of 6,000 to 3,418 next year, as is proposed in the House bill, would suggest either that we have already achieved our goals or that we are going to back down on our commitments. We know the first is not the case; we sincerely hope that the second is not. We urge an appropriation of \$108.6 million for NDEA Title IV.

A comparable reduction by the House in the educational opportunity grant program is equally distressing, for it will mean that 31,000 fewer new awards can be made in 1968 than in 1967. If the entering class at that time were going to be smaller, such a reduction would be understandable. But there is every indication that the entering class at that time will be larger. Thus the effect of the reduction will be to say to 31,000 needy and able young people that it is their hard luck that they happened to be born in 1951 instead of 1950.

Apparently the thinking of the House Appropriations Committee was that more emphasis should be given to loans and jobs than to grants. It seems to us that the Committee must have overlooked the fact that no more than one-half of a young person's need can be met by an educational opportunity grant. The very requirements of the Act are that he borrow and work in order to be eligible for a grant, and the purpose of the grant program is to avoid the necessity of loading an undue burden of debt and an undue workload on those least able to assume them.

We have already discussed the need for increased facilities support. The House Appropriations Committee has recognized this need, at least in the junior college segment of higher education, and has increased the appropriation for junior colleges by an amount of \$10 million over the Administration's request. Everyone in higher education is encouraged by this recognition of a need. But the need of four-year institutions is great also.

We are, moreover, deeply concerned that in increasing funds for junior colleges only, the House Appropriations Committee has in effect, and no doubt inadvertently, amended the basic authorizing statute. Title I of the Higher Educa-

tion Facilities Act calls for a single appropriation and specifies that 23 percent of this appropriation be allocated to public community and junior colleges. The set-aside for these colleges will rise to 24 percent in fiscal 1969. But the action of the Appropriations Committee in effect alters this to 25 percent in fiscal year 1968.

We would not argue that the percentages contained in the authorizing legislation are necessarily the best and fairest that could be devised. We would not even argue that fixing any percentage is necessarily the best approach. Perhaps the whole question should be subjected to careful study and the Congress should gather the views of all parties concerned in its search for a better formula.

The fact remains, however, that in what is still a relatively new program, the Education Committees of the House and Senate adopted the percentage approach and these specific percentages as the proper ones until a better method can be found. The higher education community has so far been united in the support of the bill as it has been written, even though various segments of higher education may well believe that refinements are desirable or possible.

We would urge, therefore, that at the very least the appropriations for Title I of the Higher Education Facilities Act be increased this year by \$44 million so that the needs of four-year institutions as well as those of the junior institutions may be recognized and that the provisions of the current authorizing legislation may be maintained. A \$44 million increase in the appropriation for Title I would automatically provide the \$10 million increase the House has already voted for junior colleges and concurrently assist the four-year institutions with their authorized percentage.

Mr. Chairman, I am grateful to you and other members of the subcommittee for giving us this opportunity to express the views of higher education. We shall be glad to answer your questions or to submit further statements on questions that we are not prepared to answer today.

VIEWS ON BUDGET REQUESTS FOR HIGHER EDUCATION

Mr. BENEZET. My name is Louis T. Benezet. I am appearing before you as a member of the board of directors and immediate past chairman of the American Council on Education.

The views I wish to present represent the position of the council as well as other educational organizations concerned with higher education in this country. The council now has a membership of 1,261 colleges and universities and 239 educational organizations. We are, therefore, in a unique position to address ourselves to the needs of the higher education community as a whole. I am proud to be able to say that in this testimony we are being joined by the Association of American Colleges, the Association for Higher Education, the Association of State Colleges and Universities, and the National Association of State Universities and Land Grant Colleges. This will give you some idea of the consensus that exists in higher education on the matters before you.

Senator HILL. You know Dr. Shelly Dobins, do you?

Mr. BENEZET. Yes, indeed I do. We work very closely together. And I think the unusual aspect of this presentation, if there is anything unusual, Mr. Chairman, is that we are representing today a group of associations of higher education, as you will see by the heading of this manuscript.

Senator HILL. I see.

Mr. BENEZET. And although there is some opinion in the Congress that professors never do agree, I can assure you, sir, that the editors do agree on this one, and we are very much together on this position. I am appearing before you to discuss certain aspects of the administration's appropriations requests which give us concern.

We are, of course, Senator, aware of the heavy pressures occasioned by the situation in Vietnam, and we know that it is the duty of this committee and the other appropriations committees to balance the resources against the military and civilian needs of the nation.

Senator HILL. We have a problem there today.

Mr. BENEZET. A great problem. What we are talking about, Senator Hill, is the continuation of what we consider to be, and I am sure that you would agree is, a major investment in higher education by the Federal Government.

Like any other major investment, once you have made it, you are committed to it, and if this is seriously interrupted or rolled back, you have grave problems among the recipients.

We are in a position today that if the Federal investment is seriously rolled back at anytime, the long-range plans of education in the service of the country will be badly disrupted.

Thus, our interest in bringing together our voice for this subcommittee's consideration.

I will now, if I may, Mr. Chairman, simply outline the main points of the changes that we would like to urge, and in particular, the reconsideration of some of the appropriations which the House committee and the House has already authorized, which seem to us very seriously under our needs.

EDUCATIONAL FACILITIES

Mr. Chairman, we have a projection of student enrollment by 1974 of 1 million students. The Office of Education, to be sure, has come up with a smaller projection, but history has proved that the Office of Education is rather conservative in its predictions and has been rather consistently low, whereas our predictions have been borne out a good deal more accurately, so that 10 million students by 1974 is a very firm prediction indeed. When you balance that prediction against the educational facilities that have been made possible by the present appropriation, we are in very serious trouble indeed. It has been estimated, Mr. Chairman, that the needed facilities just to keep up with this march of college students and graduate students will run in the neighborhood of \$3 billion per year.

Now, we have no illusions that Government should produce all of that, of course.

The present authorization is for \$11¼ billion, and I can assure you that we are doing everything that we can to raise that money and hit the States, and charge fees to make the rest of the difference, but \$640 million for facilities, against an annual need of \$3 billion, is barely more than 20 percent of the need, you see.

Senator HILL. It is pretty small; isn't it?

Mr. BENEZET. We are really in grave difficulty.

TRAINING GRADUATE STUDENTS AS COLLEGE TEACHERS

If I may move from there to an even more serious situation in our judgment, as you know, Mr. Chairman, the part of the general omnibus bill for higher education makes it possible for graduate students to be trained as college teachers. This, I think you would agree with

me, is the seed corn of the future. If we can't have the teachers, we are not going to be able to do anything in the classrooms.

The original plans were for 7,500 new fellowships for these graduate students to come and start their training for college teaching in the next year.

The present administration appropriation request is about 6,000, so we are already 1,500 new fellowships in the hole. The House committee on top of that has cut this by nearly half. This, to me, sir, would be a very disastrous move.

Senator HILL. The House committee cut that by half?

Mr. BENEZET. Yes, sir, the House committee has cut it down to what would provide only around 3,400 new fellowships for college teachers trainees. This, if I may speak personally—I happen to be the president of a rather small graduate school—but in the last decade, Senator Hill, we have moved from a school producing perhaps 8 to 10 new Ph. D.'s for college teaching every year to this year, when we produce 67.

In other words, we have grown by sixfold in a decade. This is simply because the requirement is there. But if the fellowships were cut by half, I don't think it is too much to say that a small graduate school like ourselves would be pretty much out of business, we would have to roll back so seriously.

This is what the Federal investment is, when it gets started.

Therefore, we would urge, all of us, that the Federal fellowships for graduate students be restored to the amount originally authorized, so that we can get on with the program of preparing the college teachers of the future.

INTERNATIONAL EDUCATION ACT

May I now move, Mr. Chairman, to an extremely important act, in which we have all been intensely interested, as I know the Senator has been intensely interested, and that is the International Education Act.

As you are well aware, sir, that act was very thoroughly studied in both Houses of the Congress before it was passed. The Senate particularly seemed to work hard on clarifying the purpose of the bill, but we have been waiting now for over a year for the implementation of the act in an appropriation. And we were——

Senator HILL. They didn't allow any of the estimate for that; did they?

Mr. BENEZET. No, sir, we were consternated when the House Appropriations Committee literally cut out all appropriations for the funding of the act. This is tantamount to saying that the act was a mistake. We are sure the Congress doesn't really mean that it is a mistake. We are wondering whether the House may have gone under some misunderstanding that this was some kind of foreign aid bill, and that it got mixed up in that. It is not for me to say, but my colleagues and I all agree that this is one of the most serious problems that have been precipitated, and we would urge your subcommittee to move, if possible, to restore a funding so that the act can at least get underway, and so that we can start this so obvious need for Amer-

icans to become better informed about the international problems and the thinking of other cultures, with which we have to deal. I think I heard you say a few minutes ago we do live in one world, and we can understand that world only if we have the kind of educational processes to study it.

Senator HILL. I might say I had a conference yesterday with three university presidents on this very matter.

Mr. BENEZET. Well, I had some knowledge of that, Senator Hill.

Senator HILL. Yes.

Mr. BENEZET. I am very happy you were able to see them.

COMMENTS ON HOUSE COMMITTEE'S ACTION REEDUCATIONAL FACILITIES

Now, I will hurry on, Mr. Chairman, to the comments on the House committee's actions with regard to the educational facilities, that is, title I of the Higher Education Facilities Act. As you perhaps have been told, the House did move to increase appropriation for junior colleges, because of a very correct understanding that the junior colleges are seriously pressed by enrollment problems, and the \$10 million over the administration's request was added to the facilities grants to be allowed for junior colleges. We are very happy that that happened. At the same time, the 4-year college needs are every bit as great, and what is particularly damaging is that the House committee took the \$10 million, apparently, out of the appropriation for graduate fellowships.

This is not only robbing Peter to pay Paul, we think it is robbing Peter and Paul.

Senator HILL. Did you tell the House that?

Mr. BENEZET. We, therefore, would urge, Mr. Chairman, since this essentially amounts to changing the formula of aid for new facilities and higher education, from 23 percent for junior colleges up to 25 percent of the entire appropriation, that this ought to be studied, because the very careful original study was given to this formula, and if this were allowed to remain, it would simply mean that the 4-year colleges would be so seriously handicapped that the junior colleges would be benefited to the disadvantage of the other colleges, and I don't believe that is what Congress wants to happen.

RECOMMENDED INCREASE

We would urge in closing, Mr. Chairman, that title I of the act be increased at least by \$44 million, which would bring the total appropriation only up, I believe, to \$230 million. This would include the \$10 million for junior colleges, so there would be no rolling back of the House action, but it would give the 4-year colleges some chance to make their plans in view of this vast need, and above all, Mr. Chairman, we would urge that the House action of cutting down the Federal fellowships to pay for junior college expansion be corrected, because I think that would be a rather disastrous move.

I think that is all, Mr. Chairman, in view of the time. I would be glad to try to answer any questions.

Senator HILL. Well, you have brought us an awfully good statement. As I say, I conferred with those three very distinguished educators yesterday, and they didn't tell me anything more than you have told me here today, I can say that.

In fact, I don't think they told me quite as much.

Mr. BENEZET. Thank you, sir.

Senator HILL. You have brought us an awfully good statement; thank you, we certainly appreciate it, sir.

STATEMENT OF WILLIAM C. GEER, EXECUTIVE SECRETARY, THE COUNCIL FOR EXCEPTIONAL CHILDREN, ACCOMPANIED BY MRS. ALPHA BROWN, CHIEF CONSULTANT, PROGRAM FOR EXCEPTIONAL CHILDREN AND YOUTH, ALABAMA STATE DEPARTMENT OF EDUCATION, AND DR. MAMIE J. JONES, CHIEF CONSULTANT, PROGRAM FOR EXCEPTIONAL CHILDREN AND YOUTH, GEORGIA STATE DEPARTMENT OF EDUCATION

PREPARED STATEMENT

Senator HILL. Now, Mr. William C. Geer, the executive secretary on the Council for Exceptional Children.

Mr. GEER. Senator Hill, we follow the lead of other persons of the day and request that our statements be placed in the record, sir.

Senator HILL. All right, we will have them appear in full in the record, sir.

(The statement follows:)

Mr. Chairman and members of the committee, the Council for Exceptional Children has been very pleased with the enabling legislation for the education of handicapped children which has been passed by the Congress since 1963. At this time, we would like to pay tribute to the Senate and particularly to the Senate Committee on Labor and Public Welfare for its role in initiating most of this legislation. We are also pleased with the excellent progress which has been made when programs have been funded with amounts necessary to begin new programs in a constructive manner.

However, it is our duty to point out to this Committee today that there are two programs which very likely will suffer as a result of the lack of appropriations, unless something can be done to extend the appropriations for some of these programs as passed in the House of Representatives.

I shall speak to you on one of these needs and then Mrs. Alpha Brown, Director of Special Education for the State of Alabama, and Dr. Mamie Jo Jones, Director of Special Education for the State of Georgia are prepared to speak concerning one of the other needs.

At this time I would point out to you that the appropriation for the training programs under Public Law 85-926 as amended has not been increased for the coming year. This is in spite of the fact that no programs passed by the Congress had had a sounder development nor shown greater promise in educating the youth of our country. We realize that the nation has military and defense obligations which it is currently meeting with particular emphasis in other parts of the world. We also know that there are many worthwhile domestic programs which must be expanded. However, the program for training personnel in the education of the handicapped is also one which has much to do with the future welfare and defense of our country.

We all know that in times of emergency, a well-prepared labor force to provide all of the supplies, armament, and other essentials is extremely important. Therefore, the training of our total manpower contingent is mandatory.

We would point out to this Committee—and we believe you are aware of this—that special programs for educating handicapped children is one of the ways we can extend the labor force by utilizing the mentally retarded and the physically handicapped, who otherwise would not be trained, to provide a major contribution for the country.

We were surprised this year to note that the Administration did not recommend that the \$24,500,000 appropriation for training personnel for the handicapped be expanded for this year. This program has provided effective growth for training personnel in the education of the handicapped and in some instances has helped to stimulate states, colleges, and universities, as well as other sources, to enter whole-heartedly into the financing necessary to train personnel to educate the handicapped.

During the academic year 1967-68, more than 12,000 students were expected to benefit from the training provisions for the handicapped in 240 colleges and universities located in every state except Alaska. In addition to the college and universities, all of the states, including Alaska, have training funds through which key personnel in state departments of education can be trained. The District of Columbia, and the territories of Puerto Rico, the Virgin Islands, and Guam are also participating in this program.

Recently the Office of Education made a telephone survey of all academic year award recipients for the school year 1965-66, and found that 93% of the sample of 75% of those trained that year were engaged in special education careers. Of the remaining 7%, some had married and were living in towns where there was no special education program. A few others were in localities where requirements such as two years' teaching experience were prerequisite to being employed in special education. We consider that this retention of persons who are entering the field is very high and indicates dedication on the part of those accepting the training awards.

It is also important to note that through this imaginative training program, 140 development grants have provided a means for colleges and universities to establish programs in one or more areas of the handicapped. In some instances, the stimulation grants are providing the first training program in the state. A case in point is Idaho. In 1964, a \$12,500.00 development grant to train personnel in mental retardation was made to Idaho State University. In 1967, Idaho State University has 37 full-time students majoring in the education of the mentally retarded; it has three full-time staff members who are offering a range of 12 courses in special education.

We believe that the presently anticipated appropriation of \$24,500,000 is simply not adequate because we are informed that during the last year, 2.6 dollars were required for each dollar available. Where some of the requests might not have been of sufficiently high grade to earn an award, many of the requests were considered to be worthwhile. Obviously this training program could use much more than what is presently authorized, much less appropriated.

It should be observed that these funds have a stimulating effect on the states and on our colleges and universities. In one state, Illinois, we determined that 17 colleges and universities are training personnel in the education of handicapped children. These 17 institutions have 3,572 students enrolled with majors in the field of special education. Each of the colleges and universities is receiving Office of Education training grants through which 377 students are trained. Thus, 3,195 students in Illinois colleges are being supported by funds other than federal funds. Similar results are occurring in other states, although not on such a grand scale.

We request this Committee to increase the appropriation for the training program to the authorized strength of \$34 million for the year 1968. We would point out to you that unless this is done, there can be few, if any, stimulation grants to encourage new program development during the year. Neither can there be an expansion in the number of students supported. At a time when a program is vigorously growing, to stunt its growth by marking time is not good strategy.

If in some way this appropriation can be increased, we are sure the handicapped children of the United States will be recipients of this benefit within a few years, and the working force of our country will be increased by the addition of persons to it who may otherwise become the wards of society.

PROGRAMS FOR HANDICAPPED CHILDREN

Mr. GEER. And we will then summarize in order to conserve valuable time.

We are here in the interest of the programs for handicapped children. I will discuss one of the needs that has developed due to what we consider low appropriations passed by the House, and Mrs. Alpha Brown, to my left, director of special education in Alabama, and Dr. Mamie J. Jones, occupying the same position in the Georgia Department of Education, will speak concerning another of the needs of handicapped children.

TRAINING PROGRAMS

At this time, Senator, I would like to point out to you that the appropriation for the training programs under Public Law 85-926, as amended, has not been increased at all for the coming year. This is in spite of the fact that no program passed by Congress has had a sounder development, or shown greater promise in educating the youth of our country, particularly the handicapped youth.

I have indicated in this paper several factual statements regarding the number of teachers and leadership personnel who have been trained, the number of college programs which have been stimulated, but I am simply going to say that the \$24,500,000 appropriated in the House bill is far short of what is needed to continue the excellent work of this program which you, and others associated with you, started in 1958.

In fact, we believe very strongly that the \$34 million authorization authorized by your committee in Public Law 89-105, 2 years ago, is necessary if this program is to continue to expand and develop. If this is not done, there will not be funds for stimulation grants, and for increasing the numbers of personnel who are being trained. So, we are simply requesting that this committee study very carefully the needs of this program, and try to increase the appropriation to the authorized amount, if this is feasible.

And I now will defer to the lady that I have introduced earlier.

Senator HILL. All right, fine; we will be happy to hear from you.

STATEMENT OF MRS. ALPHA BROWN

Mrs. BROWN. I am Alpha Brown, Alabama Special Education, Senator Hill, and, of course, I would like to have my statement made part of the record.

Senator HILL. Surely; we will have it appear in full in the record, Mrs. Brown.

(The statement follows:)

Mr. Chairman and members of the committee, I am Alpha Brown, Chief Consultant, Program for Exceptional Children and Youth in the Alabama State Department of Education. I certainly appreciate your interest in this program and the opportunity to present our needs to you.

We are one of the newer programs as we are just beginning our twelfth year. We provide services in a limited way to the mentally retarded, deaf, hard-of-hearing, visually handicapped, crippled, emotionally disturbed, socially mal-

adjusted, and speech impaired. We strive to provide the specialized educational program which is needed to aid pupils to become self-respecting, self-supporting as possible, socially responsible and informed adult citizens despite handicapping conditions.

The State Superintendent of Education, the State Board of Education, and the State Committee on the Education of Exceptional Children are very interested in this program and are giving time and energy in helping to promote, plan, and develop a good program of special education in our State. Many organizations and groups have worked cooperatively toward this goal. A variety of problems and needs have been encountered.

The school census of Alabama shows 901,000 pupils between the ages of 6-20. If we expand this to include pupils from 3-21 which is the age range included in our services to the handicapped Alabama has 925,000 in this range. Using the usually accepted 10% for children with handicapping conditions, this gives Alabama 92,500 handicapped pupils who cannot profit from the regular program. Alabama is providing services for approximately 11,000 pupils, so you can see all services need to be significantly increased.

Our major needs will be discussed under these headings—State Personnel, Local Personnel, Identification, Evaluation and Diagnosis, In-Service Training, Demonstration Classes and Curriculum Development, Additional Classes and Services, Additional Traineeships, More Equipment and Materials of Instruction, Additional Transportation, Appropriate Housing, Summer Programs, Parent Education, Printing.

PERSONNEL

State Personnel

More staff is needed at the state level. With 600 classes, 2 Consultants and 3 Psychologists cannot adequately meet the needs of the program. The addition of four full time consultants at the state level who would be stationed on a regional geographical basis, in the state to work with local boards of education in all aspects of programs for handicapped children and youth would improve this situation.

Local Personnel

Only two school systems in Alabama have supervisors of Special Education. Many more are needed. At least 10 more supervisors should be added as soon as possible in order to help teachers with their daily problems and to develop a strong special education program in their system.

Secretarial help, supplies, equipment, and travel for supervisors will be needed. Estimated Cost: \$166,000.

IN-SERVICE TRAINING

To meet the needs of these children and youth now and in the future adequately trained personnel are needed. This personnel should include superintendents, principals, regular teachers, nurses, psychologists, teacher aides, guidance personnel, rehabilitation counselor, social workers, and other ancillary personnel. The in-service training for this group would include developing a general understanding of the program, such as goals, characteristics of the pupils, curriculum, and methods.

For the special class teachers, special class supervisors and therapists eight regional in-service programs would be set up.

These meetings would be staffed by State Department Staff, College Personnel and one out-of-state consultant for each meeting. The programming would include dissemination of information regarding the best teaching techniques for the particular area being studied, the best materials and equipment available. Teachers would be reimbursed \$15 per day. Each local system would receive \$10 per day to pay a substitute for each class, when the teacher was attending the In-Service Meeting. Each region would have one in-service meeting a semester.

State level personnel's in-service would be from consultative services of national leaders and by attending appropriate regional and national conferences.

Estimated cost: \$60,000.

IDENTIFICATION, EVALUATION, AND DIAGNOSIS

All pupils must be evaluated and diagnosed before being placed in a special class. Special classes must not be permitted to become places where children who do not fit in the regular classroom are stationed. Exceptional children should be

placed in a program designed and equipped to cope with a specific type of disability. The placement of a pupil in a program not planned for one in his condition might be harmful to him and also prevent all other pupils from progressing as they should. Therefore, attention must be called to the vital need for proper identification, diagnosis and evaluation.

In our opinion the team approach is best. Each team would require a doctor to give a complete physical including vision and hearing.

A psychologist, to determine the intellectual ability, the social maturity, and the emotional stability of the child. An educational diagnostician, to serve as a liaison person between the public school and the diagnostic center. This person would have educational psychological training, would assist the teachers, principals and in some cases the parents, in the identification and screening process of children with exceptionalities, make referrals to the clinic, interpret the reports, and plan with the teachers an appropriate curriculum for individual students. In addition to the three persons named above the services of a child psychiatrist, a social worker, a school health nurse, school counselor, and others are often needed.

Four such teams would be needed. They would be housed geographically. Each team should have not less than a psychologist and educational diagnostician as full time staff and funds to purchase the other needed services.

It is hoped enough of these services will be available so that the pupils may be reevaluated every 2 or 3 years. Of course, any questionable cases would necessitate a reevaluation at once.

Estimated cost: \$350,000.

ONE HUNDRED TRAINEESHIPS FOR TEACHERS

The teacher is the key person in the needs and services her pupils require. Through training, she can interpret a medical diagnosis better, she understands a psychological report, she knows the characteristics of the children with whom she is working, she knows the goals of the program, how far and fast to move each child, the expected outcome of each specific program for each special type of handicapping condition. A trained teacher will insist on having the necessary services furnished her so these pupils may have a quality program. Alabama always has far more requests for traineeships than the number possible under Title III, P.L. 88-164.

Estimated cost: \$50,000.

MORE CLASSES AND SERVICES

Today there are 97 requests for new classes for exceptional children and youth in the State Office; despite the fact that thus far superintendents have not been invited to ask for additional classes and services for 1967-68. Considering the fact that staffing classes with trained personnel is very difficult, this request is limited to 100 new classes, services and teacher aids.

Estimated Cost: \$1,000,000.

TRANSPORTATION

Where possible, the regular school transportation is used for handicapped pupils. Many students live away from established bus routes, usually in rural areas and are denied training and service due to lack of transportation to bring them into centers where programs are available.

Other students, the physically handicapped, require specialized equipment in the buses such as ramps, lifts, etc. In practically every system some additional transportation is needed. In some cases this would involve purchasing of buses. Cost of services of drivers for each bus would be included.

Estimated Cost: \$400,000.

Also transportation is needed for teachers and other personnel to make home visits. To do the most effective work with handicapped children and youth the teachers need to know the family and home conditions.

Estimated Cost: \$50,000.

EQUIPMENT AND MATERIALS OF INSTRUCTION

Suitable equipment and materials of instruction are essential to good programs. Teachers need to examine the materials and equipment to see if they meet the needs of their classes. For this reason, two mobile units with all types

of equipment and materials are desired including Braille, large type and equipment for deaf and hard-of-hearing pupils. These units would be driven to various school systems, and left at each place for sufficient times to give teachers an opportunity to make their selections. A specific amount could be allocated each class with guidelines for its use. One-half time of a librarian would be needed to purchase, catalog, and maintain display.

Estimated Cost : \$250,000.

SUMMER PROGRAMS

There is a need for summer schools. Many of the mentally retarded regress during the summer months. The pupils in other areas of exceptionalities need some planned activities for the summer. Summer school should reinforce what was taught during the school year, using a variety of techniques. Other activities could involve bringing in new pupils who will attend the school the following year. This would be an orientation period and would be valuable as these pupils would be familiar with the routine and services when school opens in the fall. Much teaching could be done thru arithmetic and reading games, field trips, picnics, sewing club for older girls, shop work for boys. Recreation should be provided probably as a part of the recreation program of the community—a summer camp might be possible. Various agencies include recreation in varying degrees in their programs such as YWCA, 4-H Clubs, Scouts. Coordination would be necessary to avoid unnecessary duplication.

Estimated Cost : \$100,000.

DEMONSTRATION CLASSES AND CURRICULUM DEVELOPMENT

This would involve 4 classes of multiple handicapped children and youth. One each at primary, upper elementary, junior high and senior high level. These would operate through a contract with the University of Alabama and under the supervision of the Special Education Staff at the University of Alabama and be housed in the Medical Center, Birmingham. All teachers would have at least six years of college training with specialization in Special Education. This would be a 12 months program and have the very best known equipment and materials of instruction. The cost the first year will be much greater than the following years as much of the materials and equipment would serve several years. Plan would include time for the teachers in the field to visit during the school year as well as during the summer. Also superintendents, principals, and supervisors would be urged to visit.

Personnel involved:

- 4 teachers for 12 months
- 4 teaching assistants for 12 months
- 4 research assistants for 12 months
- 2 secretaries for 12 months

Travel, equipment, supplies, materials of instruction, etc.

Estimated Cost : \$148,000.

Each 3 people at each level would do curriculum planning for that level. All 12 people would do curriculum planning for the unit as a whole. This work would be done in conjunction with the coordinator of educational services at the Medical Center. This would also emphasize the importance of sequence of classes in developing a program of Special Education for any school system.

APPROPRIATE HOUSING

Many communities have attempted to operate special classes or provide special services in inadequate buildings or quarters not designed for school purposes. Superintendents now realize that proper housing is essential to a good Special Education Program. As a result of this realization many school systems are planning and building new school plants and remodeling other buildings and are including in their plans facilities for the education of exceptional children. Special education needs, both present and future, should be considered before building. What is needed will depend upon the type of exceptionality to be served and upon the background of the teacher, therapist or other personnel working with the children.

Estimated Cost : \$330,000.

PARENT EDUCATION

This would be done through individual counseling, group meetings and workshop. Emphasis would be placed on helping parents accept the handicapping condition and be realistic about the child's potential.

Estimated Cost: \$15,000.

PRINTING OF MATERIALS

This would involve printing of reports from in-service meetings, newsletters, brochures, and other materials that would be helpful in developing a quality program in Special Education.

Estimated Cost: \$15,000.

The needs of Special Education increase each year as the program develops. I urge you to fund Title VI, P.L. 89-10 as authorized by Congress \$150,000,000 for 1968.

NEED FOR PERSONNEL

Mrs. BROWN. I certainly appreciate your interest in this program and an opportunity to present our needs to you. We are one of the newer programs in special education, and we are giving limited services to all types of handicapping conditions. We have 600 classes, and are serving about 11,000 children.

Senator HILL. 600 classes now?

Mrs. BROWN. 600 classes. But, in Alabama, there are about 92,500 needing this service; so, you see, all services need to be significantly increased. Our major needs, I think, are personnel at the State level and the local level. The 600 classes at the State level, we have two consultants and three psychologists, and, of course, that is not enough to give the service we should have to have a good program. At the local level, we only have two supervisors of special education.

Senator HILL. Just two?

Mrs. BROWN. But we hope to have more, so they can help the teachers with their jobs, and develop strong programs for special education. We think we need about \$166,000 to do this.

IN-SERVICE TRAINING

We are asking for in-service training of all people who work with handicapped children, such as principals, psychologists, nurses, all the ancillary personnel, in addition to the teachers. And we think that would cost \$60,000.

Identification, evaluation, and diagnosis, of course, is very important, because we must get the right child in the right class. We want to place—

Senator HILL. Nothing more important than that, is there?

Mrs. BROWN. Not anything more important, because he needs a program designed and equipped to cope with his specific type of disability. If we put him in the wrong class, we may harm him, and harm other children by having the wrong child in the class.

We think that we need about \$350,000 to carry this out. We are asking for a hundred traineeships for teachers, and we have, we think our teachers need all the training of a regular teacher, plus additional skills and abilities, if she is to meet the needs of our children, and of course we have far more requests for traineeships than we can possibly grant.

Senator HILL. You do have far more? You have no trouble in getting teachers if you had the money to train them?

Mr. BROWN. That is right, the trained personnel, and we don't think you can have a special class, unless you have a trained teacher, because a teacher doesn't make a special class. We need more classes. At the present time, we have 97 requests for new classes for 1967 to 1968, and we haven't asked superintendents to apply for new units yet, so we think we need about \$1 million to take care of this.

TRANSPORTATION

We need more transportation for those who live off the schoolbus routes and can't get to the center for training.

This is largely in the rural area. We are asking 400,000 for that. And also, we think we need some transportation for teachers to visit in the homes, because they can do more effective work if they know the home condition by teachers.

We think we need about \$50,000 for that.

EQUIPMENT AND MATERIALS

We need more equipment and materials for construction, because we can't do a good job unless we have the proper equipment that meet the needs of these children, and our regular textbooks and that type of thing do not meet them. We would like to have \$250,000 for that. We would like summer programs, because students regress if out of school 3 months, particularly the mentally retarded. We would like \$100,000.

DEMONSTRATION CLASSES

We would like to set up four demonstration classes who would also do some curriculum development. This would be through a contract with the University of Alabama. These teachers would be highly trained, and it would be a 12-month program, using the best known materials and methods of instruction with supervision by the University of Alabama.

Estimated cost here is \$148,000.

HOUSING

Appropriate housing is necessary, because we find that superintendents sometimes want to place these children in inappropriate housing because there are fewer children to a class, and we would like to have better quality housing, which I think we need \$330,000 for.

PARENT EDUCATION

Parent education is another thing we need. We want to help the parent accept the handicapping condition and be realistic about the child's potential; printing of material, about \$15,000. This would involve printing of reports of various kinds.

The needs of special education increase each year as the program develops, so I urge you to fund title VI as authorized by Congress, \$150 million for 1968.

Thank you.

APPEARANCE BEFORE ALABAMA LEGISLATURE

Senator HILL. The Legislature of Alabama is in session now. Have you appeared before them?

Mrs. BROWN. What?

Senator HILL. Have you appeared before them? The Legislature of Alabama?

Mrs. BROWN. Yes, they have been supportive of the program, but they just haven't given us enough money to do what we need to do. You know, we need that dollar to do a good job.

Senator HILL. I understand that, and that dollar doesn't buy as much today as it did back in the old days.

Mrs. BROWN. It surely doesn't.

PROGRESS IN ALABAMA

Mr. GEER. I might say Alabama has made tremendous progress in this field—600 teachers—when about 8 years ago, they were really just getting started.

Senator HILL. Yes. Well, an institution "is the length and shadow of an individual," Ralph Waldo Emerson told us. Here is our Alabama individual, right here.

Mrs. BROWN. Well, you have done a lot to help us, and we appreciate that, too.

Senator HILL. Thank you. We are your shadow, though.

All right, Mrs. Jones.

STATEMENT OF MAMIE J. JONES

Mrs. JONES. Thank you. I am Mamie J. Jones, director of the Division for Exceptional Children of the Georgia State Department of Education, and I would like to request that my statement be made a part of the record.

Senator HILL. All right. We will have it appear in full in the record. (The statement follows:)

Mr. Chairman and members of the committee, I appreciate the opportunity of appearing before you today to present the cause of the nation's handicapped children. My remarks, of course, will be related to the specific needs of Georgia's handicapped children.

There are nearly 160,000 handicapped children in Georgia between the ages of three and twenty-one who should be in special education programs in the 1967-68 school year. There are now State funds for only 30,000 or 19% of these children. With all efforts and financial resources directed at the provision of classroom opportunities, equally necessary requirements such as psycho-educational re-evaluations, special transportation, new learning materials and equipment, and teacher aides are not presently possible to obtain. It is apparent, then, that the educational programs and ancillary services for these 30,000 handicapped children fall short of the basic essentials for meeting their educational needs and in no way approach providing for the other 130,000 children. It is

shocking when we think that these handicapped children in Georgia will receive no special education services, and some no education at all, unless their parents can afford to send them to one of the very few, very costly private schools.

Yet, Georgia as well as the nation is committed to meeting the educational needs of the handicapped. In its effort to meet this commitment, Georgia's special education program has shown remarkable growth. Services were initiated in 1951 with the employment of a state coordinator and 21 special education teachers in three areas of exceptionality, serving 745 children. The program has grown to include seven State Department staff personnel and 975 classes in eight areas of exceptionality, serving nearly 26,000 handicapped children during the 1966-67 school year. A chart is attached which gives specific information on the growth to date.

Georgia has no State-supported nursery or kindergarten programs; only those school systems with sufficient local support can offer pre-school programs. Yet, it is recognized that the early identification of the handicapped, with the provision of appropriate and meaningful educational experiences, may make the difference between a productive, responsible adult and a tax-supported ward of the nation or state. This may be the difference between a secure, self-sufficient human being and one with little or no appreciation of himself as an individual. There are now in Georgia many handicapped adults who cannot realize their full potential because an appropriate educational program was not provided during their youth. The cost of rehabilitation far exceeds the price for habilitation.

Georgia will have 1,125 classes for handicapped children in 1967, with the possibility of serving 30,000 children and costing the State approximately \$8,379,500. If all the handicapped children between the ages of six and seventeen only were to receive special education, the amount of State reimbursement to local school systems would be \$70,013,074. Please note that this cost is almost one-half of the amount authorized for the nation for fiscal 1968 in Title VI of ESEA. In this estimate, Georgia's children of ages three to six and 17 to 21 have not even been included.

In Georgia, few of the local school systems offer ancillary services such as special transportation, psychological re-evaluations, and specialized equipment. In many systems the real effectiveness of what the program offers is lost because of the lack of local funds to supplement basic state allotments. In some instances there is no available transportation; in others there are no special classes for particular types of handicaps; still in others an educable mentally retarded child may have to drop out of school because there is no secondary education program. At the present time, State funds are not available to expand the program or to provide the many services needed. If the \$150 million were appropriated, Georgia would have no difficulty in utilizing its share economically and efficiently.

Some of the ways additional funds would be used to initiate and improve services include:

1. Addition of 150 classes in all areas of exceptionality to serve an increase of 4,000 children-----	\$1, 094, 100
2. Increase of psychological evaluation services to all areas of the handicapped, as Georgia now provides testing for the mentally retarded only, and for reevaluations when indicated. Services for an additional 9,175 children-----	183, 500
3. Provision of additional teaching materials, equipment, and textbooks to meet the educational needs of 34,000 individual handicapped children-----	570, 000
4. Provision of special transportation for 1,600 handicapped children-----	158, 000
5. Establishment of three regional diagnostic centers for in-depth educational evaluations of approximately 400 handicapped children-----	1, 381, 000
6. Establishment of three regional materials centers for storage, reproduction, and distribution of special educational materials which would have the potential of serving every handicapped child in the program-----	523, 500
	<hr/> 3, 910, 000

Attachment 2 includes a more detailed breakdown.

The time has come when this nation can no longer afford the kind of neglect of which it is guilty when we do not recognize the dignity of all people and respect the unquestionable rights of all children, especially the handicapped, to a quality education. Defense demands are great at this time, but the demand for these children has existed for a long time—since the first handicapped child was born. The overall technological development and growing complexity of our society has increased the problems that confront these children. Assimilation of these youngsters into society is more difficult today than it has ever been. Although we are doing a better job now than has been done in the past, the consequences of not solving the problem are more serious and devastating today.

The fate of handicapped children depends on both an adequate and an appropriate educational program. No matter how costly, it is money invested in the future of our country. The conscience of society today must not only protect the rights of the handicapped, but must provide them with the educational “know-how” and equipment so that they may become contributing citizens. Gentlemen, to a great extent their fate is in your hands. Our nation has not faced its responsibilities and commitments. The time has come when we must allocate adequate funds to assist handicapped children to take their full place in the arena of community and family life.

ATTACHMENT 1

GEORGIA STATE DEPARTMENT OF EDUCATION, OFFICE OF INSTRUCTIONAL SERVICES, DIVISION FOR EXCEPTIONAL CHILDREN

Growth of educational program for handicapped children, 1951-67

School year	Teachers	Children served	School year	Teachers	Children served
1951-52.....	21	745	1959-60.....	376	11,514
1952-53.....	36	1,737	1960-61.....	424	11,312
1953-54.....	54	2,160	1961-62.....	482	11,200
1954-55.....	88	3,396	1962-63.....	495	12,028
1955-56.....	94	3,160	1963-64.....	569	15,941
1956-57.....	126	3,520	1964-65.....	650	19,760
1957-58.....	183	6,169	1965-66.....	811	23,007
1958-59.....	260	9,598	1966-67.....	975	¹ 26,000

¹ Estimated, as final reports of all school systems have not yet been received.

ATTACHMENT 2

Expanded program for handicapped children, proposed budget, 1967-68

Service	Cost
1. Additional classes, 150 to serve 4,000 children:	
A. Teacher salaries.....	\$966, 600
B. Maintenance, operation, and sick leave.....	127, 500
Total.....	<u>1, 094, 100</u>
2. Psychological services:	
A. Evaluation of 4,000 children for placement in classes funded by title VI.....	80, 000
B. Evaluation of 1,175 we are unable to test for placement in State-supported classes due to lack of State and local funds.....	23, 500
C. Reevaluation of 4,000 children presently enrolled.....	80, 000
Total.....	<u>183, 500</u>
3. Materials and equipment:	
A. 26,000 children in present State-supported classes.....	434, 000
B. 4,000 additional children entering State-supported classes.....	68, 000
C. 4,000 children in classes to be established under title VI.....	68, 000
Total.....	<u>570, 000</u>
4. Transportation for 1,600 children.....	<u>158, 000</u>
5. Diagnostic-teaching centers for 1,200 children:	
A. Salaries.....	539, 940
B. Equipment and materials.....	216, 830
C. Ancillary services, buses, travel for staff, construction, communications.....	624, 230
Total.....	<u>1, 381, 000</u>
6. Materials centers serving 34,000 children:	
A. Salaries.....	205, 500
B. Equipment and materials.....	159, 000
C. Consultants, construction, communications.....	159, 000
Total.....	<u>523, 500</u>
Grand total.....	<u>3, 910, 100</u>

PROGRAM IN GEORGIA

Mrs. JONES. Thank you. Mr. Chairman, I am indeed glad to be here today to present a case for the Nation's handicapped children, while relating it specifically to Georgia's handicapped. Mrs. Brown talked about their program. Ours started in 1951, and Georgia had attempted to show its commitment by an increase in 975 classes this year, serving 16,000 children.

Senator HILL. That is a pretty good increase, isn't it?

Mrs. JONES. Yes; yes, it is. However, if we consider all of the children between 3 and 21, there are approximately 160,000 handicapped children in Georgia between those ages.

Senator HILL. That many?

Mrs. JONES. That's right. And, when we consider this, we will have about a \$30,000 appropriation for about 30,000 children next year. Now, this is only, really, for classes.

We don't have the funds to give the special transportation Mrs. Brown discussed. We don't have funds to give the really, truly educational evaluation of these children, or the ancillary services, or teacher aids that we feel are vitally needed. We have many multihandicapped children for whom we have no program at all.

For instance, in Georgia, we do have a special fund of \$30,000, where we can send these youngsters out of State, or to a private school. However, a deaf-blind child, or a blind-cerebral palsy child, like one I saw yesterday, may have to go to a special school where it would cost \$10,000 a year; and you can understand the drain, the terrific drain that that would be on parents, not only emotionally, but financially, particularly when they do not have the funds for it.

RECOMMENDATIONS

We urge, too, that the full appropriation be made, that authorization that was made in title 6 be appropriated, and, if so, Georgia feels sure that it could use more than its share, both efficiently and effectively.

Senator HILL. You will see to that, won't you?

Mrs. JONES. I sure would. I could take my oath on it, sir.

Senator HILL. All right.

Mrs. JONES. For the coming year, we have a request that we had to turn down, for 253 additional classes.

Senator HILL. 253 additional classes?

Mrs. JONES. That is right. We could add 150 for 1967-68, but we had to turn down that many. So we would like to add another 150, which would cost approximately \$1,094,000. We would like, also, to increase our psychological services. In the past, we have been testing for placement in classes, chiefly the mentally retarded, so we have not had services, testing funds for the multihandicapped, the blind, the deaf, the crippled, and so forth.

We also have no funds for reevaluations of these children who have been put in special classes, and they need to be reevaluated, at least every several years, or when it is evident. And we could spend, easily, \$183,500 for that.

We need additional teaching materials, equipment. For instance, a braille writer is as necessary to the education of a blind child as is a pencil to the seeing one. And these we could go on and on, but certainly the \$570,000 there would help tremendously.

We need transportation funds for those children who can't be provided. Sometimes, we have a school system because they route buses differently. A child may receive education this year, but be cut off next year. One school system has 283 children on the waiting list. We need the establishment of three regional diagnostic centers for in-depth educational prescriptive teaching, so a child could be brought in and evaluated on what type of educational program he needs. And that would cost, I would expect, at least \$1,381,000.

Then we would like to establish three regional material centers, which would have the potential of serving every handicapped child by sending materials out to them, at a cost of approximately \$523,500.

An adequate educational program for handicapped children costs. It costs money. We know this. However, it saves money in the end, be-

cause it saves the life of an individual, both productively and with his own respect as a human being. We hope the full amount can be restored.

SUPPORT OF GEORGIA LEGISLATURE

Senator HILL. Do you get pretty good cooperation out of your legislature in Georgia?

Mrs. JONES. We do; yes.

Senator HILL. You do.

Mrs. JONES. We have very good support, we feel, in general, for the program, but the needs are great.

Senator HILL. Oh, yes. There is nothing more tragic to me than to see a handicapped child. There is a very compelling demand to do everything we can to help that child to have as useful and productive a life as possible.

Mrs. JONES. We had a precious 5-year-old blind, cerebral-palsy child in my office yesterday, who is quite bright, and the child would say, "And what have you been doing?" And, "Who is that?" And, "Where is she, and what does she do?" This child, of course, will have to be sent out of the State to school, for appropriate programing.

Senator HILL. Yes.

MONUMENTS TO EDUCATION AND LABOR COMMITTEE

Mr. GEER. Senator, we are quite aware that your committee, the Education and Labor Committee, in addition to this committee, has been the keystone in getting advances for handicapped children.

Senator HILL. We appreciate that.

Mr. GEER. The act of 1964, the Elementary and Secondary Act, the National Institute for the Deaf, the Model High School for the Deaf, all of these are monuments to your committee, and today we are hoping that in your wise council, as you undertake the many demands that are being made, that our request can be weighed along with all of the others that are so important.

Senator HILL. We will certainly try to do that, and we are having a meeting of our legislative committee on Monday, on the Teachers Corps. That expires, you see, on July 1. And I shall certainly tell them of the very kind and generous things you have had to say.

Mr. GEER. Thank you, sir.

Senator HILL. And the very fine testimony that you have got here this morning.

Mrs. JONES. Add our comments, too.

Senator HILL. Thank you. All right. I will tell them of the very fine testimony you have brought here this morning. We appreciate it very much. Thank you very much. We certainly appreciate your testimony.

Mrs. JONES. Thank you so much.

**STATEMENT OF MRS. BARBARA D. McGARRY, EXECUTIVE
DIRECTOR, THE AMERICAN PARENTS COMMITTEE, INC.**

PREPARED STATEMENT

Senator HILL. Now Mrs. McGarry. Would you like to bring your daughter up with you?

Mrs. McGARRY. She would be thrilled, Senator, if you will permit it.

Senator HILL. Bring her with you.

All right, Mrs. McGarry, you may proceed now.

Mrs. McGARRY. Mr. Chairman, with your permission, I would like to request that our brief statement be placed in the record, and I will merely give the highlights of it, because I know your time is very, very limited.

Senator HILL. All right; good.

(The statement and resolution follow:)

Mr. Chairman and members of the committee, it is indeed a pleasure for me to appear before this Committee once again, to present our organization's views with regard to those items in the fiscal 1968 federal budget that will vitally affect our nation's children.

This testimony marks the 20th year that an officer of our organization has appeared before this Committee, on behalf of the annual appropriations for children. From this perspective, we have been gratefully aware of your Committee's recognition of the fact that the needs of children do not stop, because of crises in the adult world. This year would seem to have more than its share of crises at present, with uncertainties of the national debt-ceiling a reflection of heavy defense commitments in a rapidly changing international scene. The American Parents Committee fully appreciate the need for establishing relative priorities in this situation, and asks only for your Committee's customary balanced appraisal of our requests, in your difficult task of total considerations.

In brief, our organization wishes to reaffirm its support for certain programs of the U.S. Children's Bureau; Food and Drug Administration; U.S. Office of Education; U.S. Public Health Service; and the new Model Secondary School for the Deaf.

U.S. CHILDREN'S BUREAU

The Resolution attached to this statement represents the unanimous support given, at our last Board of Directors meeting, for Children's Bureau activities. We therefore regretfully note that H.R. 10196 has not equalled the Budget request in some programs, and in other programs failed to equal the authorized amounts.

As members of your Committee are well aware, both the Maternal and Child Health Services, and Crippled Children's Services, are required by law to become available "to all parts of the State" by 1975. In order to accomplish this, the Social Security Amendments have authorized increases by steps each year. For fiscal 1968, however, the Budget request for these two programs remains at the previous year's level, although a \$5 million increase is authorized for each program. Adherence to last year's level will inevitably mean that both these programs will be set back a year further from their 1975 requirement of total coverage.

For Child Welfare Services, operating under the same requirements, there is an even wider gap—\$9 million—between 1968 authorization and the budgeted amount. Although funds already approved are equal to the Budget request, we hope your Committee will find it possible to recommend authorized amounts for all three of these proven programs.

The American Parents Committee also supports restoration of funds to their requested level for the following programs: research, training, and demonstration projects in Child Welfare; special project grants for the health of school and preschool children; Research and Training under the special foreign cur-

rency program; and research projects on Maternal and Child Health and Crippled Children.

I wish to speak especially to the deletion of the request for foreign currencies for the international research program (H. Rept. 271, page 42).

Termination of Children's Bureau participation in the international research program using foreign currencies would mean that important research into ways of improving health services for mothers and children would not be carried forward. The agencies other than the Children's Bureau engaged in research under the foreign currency program have different functions and different purposes. The Vocational Rehabilitation Administration responsibility in the field of handicapping conditions is for adults, not children; the Institute of Child Health and Human Development and the Children's Bureau by agreement work in different areas—the National Institute of Child Health and Human Development in basic research and the Children's Bureau in program research—that is, research immediately related to the improvement of health services for mothers and children. Review of the materials presented to the House Committee by the Welfare Administration of which the Children's Bureau is a part demonstrates clearly this relationship—research carried on abroad with foreign currencies under the aegis of the Children's Bureau includes projects in maternity and new born care, services for handicapped children including mentally retarded children, and studies in child growth and development.

The overseas student research fellowships, also financed with foreign currency, provide opportunity for senior medical students from United States medical schools during their elective period to work abroad in one of the Children's Bureau research projects for 8 to 10 weeks. This provides a valuable source of pediatric training for our students not otherwise available to them and is an excellent use for United States purposes of some of the United States owned foreign currencies.

Also, while the difference is relatively small between the request and the amount thus far approved for Children's Bureau salaries and expenses, we urge restoration of the original 1968 budget-request, for the following two reasons:

(1) The procedural requirements laid down by the U.S. Supreme Court's recent *Gault* decision will require many juvenile courts throughout the country to institute appropriate revisions and, hopefully, to provide more adequate rehabilitative services to juvenile offenders. The American Parents Committee strongly recommends providing a special Juvenile Delinquency Services consultant in each of HEW's nine regional offices, to assist in meeting the needs of the widely-varying systems of our juvenile courts.

(2) The 1970 White House Conference on Children and Youth already requires detailed advance planning and staffing by the Bureau, if it is to be equally as successful as the six previous White House Conferences. While this responsibility for organizing and preparing for this Conference is borne by the Children's Bureau, no implementation is possible with the reduced funds now approved for fiscal 1968.

FOOD AND DRUG ADMINISTRATION

The American Parents Committee has noted the earmarking of almost half of FDA's requested budget increase for 1968, for the purpose of further implementing the Drug Abuse Control Act. A year ago, testifying before this Committee, we emphasized that over one million teen-age Americans were involved with psychotoxic drugs (both stimulant and depressant) which could be effectively controlled through adequate implementation of this Act. Continuing control of such drugs is even more urgently needed now, with the likelihood that new drugs under investigation may be added to the list of those now considered dangerous enough to come under the Act's purview.

Although, the House-approved total of FDA does not equal the Budget request, the Committee's report specifically prohibits any reduction of the amount budgeted for the Drug Abuse Control program (H. Rept. 271, page 9). We hope that your Committee will concur in supporting this important program.

For continuing administration of the amended Pure Foods and Drugs Act, FDA deserves the support of all citizens concerned with the quality of food we provide our families, as well as cosmetics and drugs. At a time when the word "additive" is widely accepted yet little understood, the consumer can be especially grateful for this agency's ongoing research and evaluation.

U.S. OFFICE OF EDUCATION

The American Parents Committee fully supports elementary and secondary educational activities; school assistance in federally-affected areas, and expansion and improvement of vocational education, most of whose programs have thus far been granted their requested amounts, as far as authorizing legislation has permitted.

For educational improvement for the handicapped, the amount approved is also equal to the Budget request. However, this total represents a little more than one-third of the 1968 authorization for ESEA's new Title VI, for the education of handicapped children.

"One child in ten in our country is afflicted with a handicap which, if left untreated, severely cripples his chances to become a productive adult," stated the President's message on education last February, concerning handicapped children; and, the message added:

"We must also give attention to their special educational needs . . . There are now only 70,000 specially trained teachers of the handicapped—a small fraction of the number the Nation requires. In the next decade, 5 times that number must be trained and put to work."

In the coming year alone, according to his February 8 message on the welfare of children, the President confirmed that more than 4 million American children will suffer physical handicaps, and another 2 million will fall victim to preventable accidents or disease. On the basis of these facts, we respectfully urge your Committee's consideration of funding Title VI more nearly to the extent of authorizations.

U.S. PUBLIC HEALTH SERVICE

The American Parents Committee continues its support for the following USPHS programs: Communicable Disease control; Community Mental Health centers; the National Institute of Child Health; Indian and Migrant Health; and the new Health Manpower Education and Utilization program.

MODEL SECONDARY SCHOOL FOR THE DEAF

Gallaudet College, D.C., the only institute of higher learning in the world today for the deaf, is authorized by P.L. 89-694 to establish a model secondary school for the deaf, on its campus. It is our hope that this new school will provide impetus for the construction of other such specialized schools, in those areas where there is presently no opportunity for the deaf youngster to gain a secondary education. We respectfully urge your committee's special consideration of this budgetary item, on behalf of our nation's youth who live in the silent world.

Finally, to members of this Committee, I should like to express our appreciation for the continued privilege of appearing before you, in our common desire to secure the highest possible quality of care and education for all Americans.

RESOLUTION OF THE AMERICAN PARENTS COMMITTEE IN SUPPORT OF THE U.S.
CHILDREN'S BUREAU ACTIVITIES

Whereas, The President of the United States has urged that all appropriate measures be adopted to lower our country's infant mortality rate, which in the past year was 24.8 per 1,000 live births and exceeded 100,000 cases, ranking the U.S. twelfth among those countries in the world attempting to reduce their infant mortality rate; and,

Whereas, The U.S. Children's Bureau has long been designated by the Congress as uniquely qualified to administer federal programs to combat infant mortality, to promote maternal and child health and child welfare, and youth development; and

Whereas, The incidence of infant mortality and the hazards of pregnancy occur most frequently in low-income families whose children comprise one-third of our nation's child population, concentrated in large cities or depressed rural areas; and

Whereas, To combat these problems, the U.S. Children's Bureau now has 52 comprehensive maternity and infant care projects including those in our ten largest cities, under grants from the 1963 Maternal and Child Health and Mental

Retardation Planning Amendments, which amendments will expire on June 30, 1968; now, therefore

Be it resolved: That the Board of Directors, acting in its fall meeting on behalf of the American Parents Committee, Inc. express its support to the appropriate Committees of the 90th Congress, of new amendments to Title V of the Social Security Act which would emphasize the purpose of reducing infant mortality; support intensive-care units in hospitals and follow-up care for infants in the "high-risk" category; and provide an appropriate increase in federal funds in order to extend the above projects to other major cities and rural areas; and respond to increased patient load; and

Be it further resolved: To stimulate a coordinated attack by the States on these problems, taking into account the steadily rising costs of medical care, and the increased costs of administration of the 1965 amendments to the Social Security Act, that the Maternal and Child Health Services provisions of this Act be both extended and appropriately broadened; and

Be it further resolved: That this Act's provisions of Services to Crippled Children be similarly extended and broadened, so that both Services may be made available to all parts of the States by 1975, as required by law; and

Be it further resolved: That a new provision be made in the Social Security Act, for the daily group care of those children so severely retarded that they cannot be accepted in public school programs for retarded children, with expanded emphasis on research relating to maternal and child health and crippled children's programs that, hopefully, will prevent many such instances of retardation in future generations; and

Be it finally resolved: That the American Parents Committee, Inc., through appropriate action by its Board of Directors, record our continued opposition to any proposals to attenuate or transfer these or any other programs administered by the U.S. Children's Bureau; and we hereby reaffirm our appreciation for the dedicated spirit, imaginative and compassionate approach, and skilled administration of the U.S. Children's Bureau on behalf of our nation's children.

SUPPORT OF VARIOUS PROGRAMS

Senator HILL. Excuse me 1 minute. What is your daughter's name?

Mrs. McGARRY. This is Jeannette McGarry.

Senator HILL. That is a lovely name. I want that to appear in the record, you see, the fact that she was here with you, appearing before us in behalf of your case.

Mrs. McGARRY. I welcome the privilege of your allowing her in this hearing this morning, because I think every American child needs to know all they can about the function of their Government and share the pride in it that the adults have.

Senator HILL. It is mighty good to have you here. Honored to have you here, dear; honored.

Mrs. McGARRY. In a very brief statement, our organization, the American Parents Committee, wants to reaffirm its support for the 20th year for certain programs of the U.S. Children's Bureau, the Food and Drug Administration, the U.S. Office of Education, the U.S. Public Health Service, and the new Model Secondary School for the Deaf.

As members of this committee are well aware, a total of \$19 million was the difference between the authorized amounts and the actual budget amounts for three programs in Children's Bureau, the Maternal and Child Health Services, the Crippled Children's Services, and the Child Welfare Services, and we know the difficult considerations that your committee is faced with in the total evaluation of all requests made. We hope that this, however, will be taken into consideration, sir.

RESEARCH ON TYPHOID FEVER

We do have one special point that I would like to speak to, and interestingly enough it has to do with research on typhoid, very possibly.

Senator HILL. Research on what?

Mrs. McGARRY. Typhoid.

Senator HILL. Oh, typhoid fever.

Mrs. McGARRY. It will give our American medical students a chance to see typhoid cases, as we mentioned earlier this morning.

Termination of the Children's Bureau participation in the international research program using foreign currencies would mean that—

Senator HILL. You are going overseas for this typhoid research now?

Mrs. McGARRY. Yes.

Senator HILL. That is good. I mean, if we have to have it; if we have to have it, that's the best place to have it.

Mrs. McGARRY. It is well to recognize it wherever it occurs, I believe.

Senator HILL. I understand.

HOUSE ACTION

Mrs. McGARRY. This would mean that important research into ways of improving health services for mothers and children would not be carried forward, because under the House appropriations thus far granted, elimination of this program has been anticipated.

But I notice in the House Report 271, there is a very evident confusion in this program with other functions, The Vocational Rehabilitation Administration responsibility in the field of handicapping conditions is for adults, not for children. The Institute for Child Health and Human Development and the Children's Bureau by agreement work in different areas. The National Institute of Child Health and Human Development in basic research, and the Children's Bureau in program research; in other words, research immediately related to the improvement of health services for mothers and children.

OVERSEAS STUDENT RESEARCH FELLOWSHIPS

The overseas student research fellowships also financed with foreign currency, provide opportunities for senior medical students from U.S. medical schools during their elective period to work abroad in one of the Children's Bureau research projects for 8 to 10 weeks. This provides a valuable source of pediatric training for our students that would not otherwise be available to them, and it is an excellent use for U.S.-owned foreign currencies.

CHILDREN'S BUREAU, SALARIES AND EXPENSES

Also, while the difference is relatively small between the request and the amount thus far approved for Children's Bureau salaries and expenses, we urge restoration of the original 1968 budget request with the following two emphases:

First, the procedural requirements laid down by the U.S. Supreme Court's recent *Gault* decision will require many juvenile courts

throughout the country to institute appropriate revisions and, hopefully, to provide more adequate rehabilitative services to juvenile offenders. The American Parents Committee strongly recommends providing a special juvenile delinquency services consultant in each of HEW's nine regional offices, to assist in meeting the needs of the widely varying systems of our juvenile courts.

Second, the 1970 White House Conference on Children and Youth already requires detailed advance planning and staffing by the Bureau, if it is to be equally as successful as the six previous White House Conferences. And this would not be possible under the House appropriation grant.

Senator HILL. Yes. The money is not there.

Mrs. McGARRY. No, it isn't.

FOOD AND DRUG ADMINISTRATION

Under the Food and Drug Administration, the American Parents Committee has noted the earmarking of almost half of FDA's requested budget increase for 1968, for the purpose of further implementing the Drug Abuse Control Act. A year ago, testifying before this committee, we emphasized that over 1 million teenage Americans were involved with psychotoxic drugs, both stimulant and depressant, which could be effectively controlled through adequate implementation of this act. Continuing control of such drugs is even more urgently needed now, with the likelihood that new drugs under investigation may be added to the list of those now considered dangerous enough to come under the act's purview.

Although the House-approved total for FDA does not equal the budget request, the committee's report specifically prohibits any reduction of the amount budgeted for the drug abuse control program (H. Rept. 271, p. 9). We hope that your committee will concur in supporting this important program.

For continuing administration of the amended Pure Foods and Drugs Act, FDA deserves the support of all citizens concerned with the quality of food we provide our families, as well as cosmetics and drugs. At a time when the word "additive" is widely accepted yet little understood, the consumer can be especially grateful for this agency's ongoing research and evaluation.

HANDICAPPED CHILDREN

There is little I can offer after the eloquent testimony of Mrs. Brown and Mrs. Jones on handicapped children. We can only say that we concur 100 percent in the need there, it is very evident, and we would like to point that for the new title 6 program of ESEA a little more than one-third of the 1968 authorization has thus far been granted.

Under U.S. Public Health Service, we support the communicable disease control mass inoculation, community health centers, mental health centers, the National Institute of Child Health, Indian and Migrant Health, and the new Health Manpower Education and Utilization program.

MODEL SECONDARY SCHOOL FOR DEAF

Finally, we would like to express our particular support for the new Model Secondary School for the Deaf, which would be located on the campus of Gallaudet College.

Senator HILL. Yes.

Mrs. McGARRY. We think it is a very wonderful inspiration for perhaps building other schools where they are locally needed for those children who live in a silent world.

This concludes my remarks, and I would be happy to answer any questions I can.

Senator HILL. I certainly appreciate your testimony very much. Anything you would like to add, Jeannette?

Miss JEANNETTE MCGARRY. No.

Senator HILL. We appreciate very much your being here.

Mrs. MCGARRY. You are very kind, sir.

Senator HILL. I want to thank you for your testimony. We certainly appreciate it. We certainly do. Thank you very, very much.

STATEMENTS OF MRS. LEONARD L. MANCUSO, PRESIDENT OF THE NATIONAL SCHOOL BOARDS ASSOCIATION AND MEMBER OF THE GLASSBORO, N.J., SCHOOL BOARD; AND PAUL N. CARLIN, DIRECTOR OF FEDERAL AND CONGRESSIONAL RELATIONS, NATIONAL SCHOOL BOARDS ASSOCIATION

PREPARED STATEMENT

Senator HILL. Now, Mrs. Mancuso.

Mrs. MANCUSO. I am sure that, not necessarily for the record, you know that I am from Glassboro, N.J., where we are honored this morning to have the President of the United States.

Senator HILL. He is right there?

Mrs. MANCUSO. He certainly is. There is great community excitement.

Senator HILL. I was in New Jersey before you were born; in the "war to end wars." We didn't do the job. We didn't end wars. But I was there in New Jersey for a while. That is before you were born.

Mrs. MANCUSO. I will take your word for that, sir. I certainly am not about to admit that I might have been there at that time.

Senator HILL. We are glad to have you here.

Mrs. MANCUSO. It is very kind of you to have us.

As you have indicated, I am Mrs. Mancuso, the president of the National School Boards Association, and I have with me this morning Mr. Paul Carlin, who is the National School Boards Association's Director of Congressional and Federal Relations.

We are extremely pleased, Senator Hill, to have this opportunity to talk with you about our concerns in this present appropriations bill and legislation.

In the interest of your time, hopefully our printed remarks will be part of the record.

Senator HILL. They will appear in full in the record.
(The statement follows:)

I am Mrs. Leonard L. Mancuso, President of the National School Boards Association and a member of the Glassboro, New Jersey School Board. I am accompanied by our Association's Director of Federal and Congressional Relations, Mr. Paul N. Carlin.

The National School Boards Association is a non-profit federation of the state school board associations of the fifty states, the District of Columbia, and the Virgin Islands. Our Association, through its member state school boards, represents more than 86,000 elected and appointed local school board members. These citizen leaders serve voluntarily on the governing boards of their local school districts without compensation. In many communities, this amounts to a part-time assignment with virtually full-time responsibility.

The National School Boards Association is the only national organization representing local school boards and its primary objective is the strengthening of public education through active citizen participation in the policy making process of educating our children.

I appreciate this opportunity to appear before your Subcommittee, on behalf of the National School Boards Association, to discuss the fiscal year 1968 Appropriation Bill for the Departments of Labor, and Health, Education, and Welfare, and Related Agencies. For the convenience of your Subcommittee, my remarks will be specifically directed toward the "Elementary and Secondary Educational Activities" (pp. 13-14 of H.R. 10196) and the "Salaries and Expenses" (p. 20 of H.R. 10196) sections of the Office of Education's portion of this appropriation bill.

TIMING OF APPROPRIATIONS AND LEVEL OF FUNDING

The National School Boards Association has described the Elementary and Secondary Education Act of 1965 "as one of the most significant educational landmarks of our generation." The availability of a significantly higher level of Federal funds has enabled local school boards and their districts to improve the quality of educational opportunity for the disadvantaged children of their communities.

This relatively new partnership in the financing of American education has also been accompanied by "growing pains." One of the most crucial of these problems, as they confront local school boards, is the incompatibility of the Federal legislative calendar with the school year.

Nearly all of the school boards prepare their local budgets during the months of late Winter and early Spring. In addition, numerous States require the school boards to actually sign contracts with their teachers, for the ensuing school year, before May 1st and in some states June 1st.

In addition, some States have statutes specifically prohibiting local school boards from budgeting funds in excess of actual cash receipts. Therefore, if the appropriation for an existing Federally-funded local project has not been enacted into law, local school boards are oftentimes faced with the dilemma of either dismissing the project's staff and teachers or violate their state statutes in hopeful anticipation that the individual project will be Federally funded sometime before the end of the school year.

The "quality" of the programs funded under Title I of the Elementary and Secondary Education Act can be substantially improved if the local school boards can plan ahead with financial certainty.

A second major problem relates to the level of funding. Through the 1966 Amendments to Title I of the Elementary and Secondary Education Act, a precise formula significantly expanded the categories of eligible children by identifying eligible children in accordance with census data, AFDC data, and children classified as neglected, delinquent, or foster children.

Beginning with fiscal year 1968, the family low-income factor under which children are determined to be eligible will go from \$2,000 to \$3,000. Also, the minimum rate of payment per child in the formula will be the national average expenditure per pupil, wherever it is greater than the State average.

With only nominal increases in the total appropriations for Title I of ESEA being requested for fiscal year 1968, this formula change will mean that a significant number of school districts, including those located within major metropolitan areas, will receive less funds under Title I of ESEA during fiscal year 1968.

This will occur even though H.R. 10196 insures that the aggregate amount that each State receives will not be diminished from the fiscal year 1967 appropriation, because the physical location of these newly eligible categories of children do not necessarily coincide with the previously eligible categories.

In addition, with only nominal increases in total appropriations over the three-year life of this program, the average amount available on a per capita basis for each educationally deprived child in the formula will have declined from \$210 in FY 1966 to \$170 in FY 1967 to \$150 next year.

RECOMMENDATIONS

In order to solve the practical dilemmas confronting local school boards caused by the incompatibility of the Federal legislative cycle with the school year and to enable local school boards to adequately assume expanded responsibilities for the new categories of eligible children, the National School Boards Association recommends that your Subcommittee:

- a. Increase the appropriation for Title I of ESEA from \$1.191 billion to \$1.7 billion for fiscal year 1968. (attached to this statement is a state-by-state estimated distribution under this level of funding.)
- b. Provide specific authority in this bill (H.R. 10196) to authorize the U.S. Commissioner of Education to make, as early as March 31, 1968, an advance commitment of the total amount of operational grant funds under Title I of ESEA which eligible school districts shall receive; provided, that no actual payment of these funds shall be made until after July 1, 1968.

REGIONAL OFFICES OF THE U.S. OFFICE OF EDUCATION

Last January, the National School Boards Association joined with the American Association of School Administrators, Council of Chief State School Officers, National Association of State Boards of Education, National Congress of Parents and Teachers, and the National Education Association in making the following recommendation relating to the Regional Offices of the U.S. Office of Education:

"We oppose expansion of the Regional Offices of the U.S. Office of Education and recommend that wherever possible educational functions and authority be vested in State Departments of Education."

The National School Boards Association recommends that there be a clear delineation of the channels of communications, the decision-making authority, and the appeals procedure as they pertain to relationships between and among the U.S. Office of Education, its Regional Offices, the State Departments of Education, and local boards of education.

We are therefore seriously concerned with the provision in the U.S. Office of Education's "Salaries and Expenses" provision (p. 20 of H.R. 10196) for their Office of Field Services, which would increase this category from an actual expenditure of \$1,981,000 in fiscal year 1966 to \$8,014,000 for fiscal year 1968. This monetary acceleration will increase the U.S. Office of Education's permanent field staff from 147 positions in fiscal year 1966 to 634 positions in fiscal year 1968.

We specifically recommend that the Subcommittee clearly express, in the Committee Report, its intention that the State educational agencies be strengthened rather than a rapid acceleration in the establishment of the U.S. Office of Education's Regional Offices.

SCHOOL ASSISTANCE IN FEDERALLY AFFECTED AREAS

The ESEA Amendments of 1966 provided for a liberalization in the Federally-affected areas program by expanding the basis for local school districts to qualify for aid under this program in a meaningful manner which can be especially helpful for metropolitan area school districts.

We specifically recommend that this program be funded at a level which will include these newly eligible school districts and that the Subcommittee delete the following language from p. 15 of H.R. 10196:

"Provided further, That application filed on or before June 30, 1967, shall receive priority over applications filed after such date."

I appreciate this opportunity to present these views on behalf of the National School Boards Association.

Thank you.

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 2469

Estimated distribution of \$1,700,000,000 under title I, Public Law 89-10, fiscal year 1968

	<i>Estimated total State amounts ¹</i>
United States and outlying areas-----	\$1, 700, 000, 000
50 States and District of Columbia-----	1, 658, 558, 430
Alabama-----	62, 136, 646
Alaska-----	2, 626, 231
Arizona-----	12, 893, 554
Arkansas-----	38, 857, 647
California-----	96, 146, 212
Colorado-----	12, 825, 698
Connecticut-----	10, 987, 783
Delaware-----	3, 026, 736
Florida-----	49, 448, 350
Georgia-----	67, 774, 360
Hawaii-----	3, 434, 935
Idaho-----	4, 836, 639
Illinois-----	60, 264, 834
Indiana-----	25, 271, 385
Iowa-----	22, 920, 392
Kansas-----	14, 428, 063
Kentucky-----	50, 400, 015
Louisiana-----	55, 871, 142
Maine-----	7, 073, 843
Maryland-----	19, 996, 861
Massachusetts-----	20, 726, 004
Michigan-----	42, 860, 299
Minnesota-----	30, 117, 560
Mississippi-----	60, 049, 286
Missouri-----	37, 829, 155
Montana-----	5, 353, 585
Nebraska-----	11, 579, 541
Nevada-----	1, 421, 187
New Hampshire-----	2, 595, 529
New Jersey-----	31, 628, 336
New Mexico-----	11, 829, 019
New York-----	150, 718, 507
North Carolina-----	87, 932, 088
North Dakota-----	7, 799, 582
Ohio-----	49, 233, 732
Oklahoma-----	25, 926, 690
Oregon-----	10, 628, 581
Pennsylvania-----	67, 823, 165
Rhode Island-----	5, 043, 150
South Carolina-----	53, 010, 325
South Dakota-----	8, 931, 210
Tennessee-----	59, 842, 931
Texas-----	122, 630, 316
Utah-----	4, 373, 075
Vermont-----	3, 092, 333
Virginia-----	49, 106, 065
Washington-----	14, 264, 636
West Virginia-----	27, 562, 452
Wisconsin-----	24, 416, 020
Wyoming-----	2, 410, 308
District of Columbia-----	6, 599, 437
American Samoa-----	
Canal Zone-----	
Guam-----	41, 441, 570
Puerto Rico-----	
Virgin Islands-----	

¹ Estimated authorization, \$2,442,337,720 (\$3,000 p.a. income factor, A.F.D.C. 1965, 50 percent estimated State or national average C.E. per A.D.A., 1965-66, \$150,000 minimum administration) ratably reduced to \$1,700,000,000, with no State receiving less than the 1967 allotment for grants within the State.

OFFICE OF EDUCATION

ELEMENTARY AND SECONDARY EDUCATION ACTIVITIES AND SALARIES
AND EXPENSE

Mrs. MANCUSO. And we will attempt to summarize our suggestions and recommendations. For the convenience of the committee, we will direct our statement specifically to our concerns on the elementary and secondary education activities within the budget, and the salary and expense items of the Office of Education appropriation.

I am sure that you are aware, sir, of our pleasure in the educational family at the many fine results of the Elementary and Secondary Education Act of 1965.

Senator HILL. It has been very helpful, hasn't it?

ASSISTANCE TO DISADVANTAGED CHILDREN

Mrs. MANCUSO. It certainly has been, and we have been provided with needed resources at many levels, and particularly pleased in many districts with the kinds of programs we have been able to develop under the title I program for the assistance of disadvantaged children in this Nation.

Of course, I think that we are aware, Senator, of your own interests and efforts in this area, as the chairman of this committee, and the chairman of the Senate committee; your interest and concern for these children.

The local school boards throughout the Nation are very much concerned about the problem of the growing pains that are associated with these programs, particularly as it affects the implementation and funds. One of the most crucial of the problems, I am sure you have been informed many times, is the incompatibility of the Federal legislative calendar with the local school year in terms of implementing these programs. I did note that the first report of the House committee devoted itself entirely to this question of the funding procedures. Nearly all school boards we are aware of do their budgeting in the spring or in the late winter. In addition, there are some of our States that require boards to complete contracts with teachers before May 15. There are others who are not permitted to use locally budgeted funds in lieu of anticipation of Federal funds. Therefore, they are not able in these circumstances to implement the programs that they are anticipating under these Federal funds.

TITLE I FORMULA

A second major problem is the funding procedure itself. I am sure that you are aware, sir, that the precise formula in the title I act, expanding the categories of eligible children, makes this a much broader range; that we are now finding children eligible from the AFDC data, census data, and those that are neglected or classified as foster children are now eligible, which spreads the very small change in the total appropriation over a much wider need in the local school districts, and this just makes that much less proportionately available for the kind of problems that we are attempting to solve with the assistance of Federal Government funds.

PER-CHILD COST DECLINE

In addition, with these very nominal increases that we have had, and the total appropriations over the 3-year span of the appropriations under title I, we find, per capita, a growing decline at the local level. Fiscal year 1966 we averaged about \$210 per child. In fiscal year 1967, \$170. We would anticipate under the present recommended appropriation level, \$150.

Senator HILL. What?

Mrs. MANCUSO. \$150 for next year; so in that period of time we actually, with a growing need, a growing level of aspiration because of the concerns in this area, we find that we have had approximately \$60 decrease in per capita funds. This, as I am sure you recognize, is a significant problem in many, many districts.

Senator HILL. Oh, yes.

Mrs. MANCUSO. Therefore, we would recognizing the problems that are inherent in the appropriations procedure and in the budgeting procedures, and recognizing that these are many times not the kinds of choices you would have chosen to make—

Senator HILL. We have our problems all right, particularly at this time.

BUDGET REQUEST INCREASE

Mrs. MANCUSO. Yes, we are very much aware of these, but we would want to call to your attention, at least, our recommendations in this area. In order to solve the problem facing local boards of the incompatibility of the Federal calendar and the school year budget calendar, we would like to recommend first that the increase in the appropriation for title I of the ESEA be changed from 1 point, or 1.191, to \$1.7 billion for fiscal year 1968. We have attached to our statement the breakdown of funds.

Senator HILL. Yes.

Mrs. MANCUSO. That would accrue to the States if this were increased. Short of this, I am sure that you would recognize that you would have a number of States contrary to the original provision that will receive less funds in aggregate than before. Primarily, because of the broadening of the eligibility categories.

APPROPRIATION LANGUAGE

Secondly, we would request that in the next appropriation that we would provide specific authority in the bill to authorize the U.S. Commissioner of Education to make as early as March 31 in 1968 an advance commitment of the total amount of operational grant funds under title I, which the eligible school district should receive. Of course, recognizing the responsibility, we would provide that no actual payment of the funds would be made until July 1, 1968.

Senator HILL. But you would have that information.

Mrs. MANCUSO. Yes. In other words, it would be certified that at least this, if there were a supplemental, or a change, an increase, this could be appropriated as was found in the wisdom of the committee. But that we would, by March 31, have at least a commitment so that we could proceed with employees, materials, equipment, and so forth.

REGIONAL OFFICE EXPANSION

Secondly, we would like to call to your attention a recommendation relative to the Office of Education budget. We are concerned with the expansion of the regional offices, the U.S. Office of Education, and the national school boards would recommend that in your efforts and in your legislative statements, that you call to the attention of the Office the necessity for the clear delineation of the channels of communication, the decisionmaking authority, and the appeals procedure as they would pertain to the U.S. Office in Washington, its regional offices, the State departments of education, and local boards of education. We are concerned with the provisions as they are found in the appropriations measure.

I call to your attention the fact that this would mean that from an actual expenditure in 1966 of approximately \$2 million, in 1968, this regional growth would account for \$8 million. This is a monetary acceleration that would develop the field offices from 147 positions in 1966 to 634 positions in 1968.

Senator HILL. Yes.

Mrs. MANCUSO. We would specifically recommend, sir, that you consider in your committee report stating your intention that the State educational agencies be strengthened, rather than that there be a rapid acceleration of the regional offices of the U.S. Office of Education.

FEDERALLY AFFECTED AREAS

Thirdly, we would like to recommend in line with the resolution that came out of our assembly in Portland a few months ago, that in line with the ESEA, which provides for liberalization of federally affected areas, that we would like to recommend that this program be funded at a level which will include newly eligible school districts, and that the subcommittee delete the following language:

Provided further, That application filed on or before June 30, 1967, shall receive priority over applications filed after such date.

I think you are aware that with the change in the 3 percent or hundred, whichever is lower, we have had larger numbers of areas, and it is particularly affecting large cities. There are more eligible areas: therefore, the per capita gain will go down, and there is just not enough funding in this appropriation to fully fund the impacted aid, and for many districts, again, I know you are more than aware that that impacted aid is an important part of their operational budget.

Senator HILL. Yes.

Mrs. MANCUSO. I think that that in brief would present our major concerns with the appropriations as indicated in the request before you. I think I would just generally conclude my remarks by indicating our certain pleasure with the interest and concern that is being shown by you, your committee, and the government offices in general to the needs of education at the local level.

We do express our concerns with the funding, the problems of expectations at the local level with inadequate funds to meet those expectations.

I think, as the speakers before us, one of the more dramatic areas certainly is in the area of handicapped children.

Senator HILL. No doubt about that.

Mrs. MANCUSO. With 10 percent of the youth of the Nation needing this kind of service, I think we find in even some of our wealthier States, for example, here, recently, New Jersey had less than 50 percent of the children who need this kind of service are presently receiving it.

Senator HILL. Less than 50 percent?

Mrs. MANCUSO. In New Jersey. This is what the State department tells us, and if it is correct, that 10 percent of our children are handicapped in some way, this is a serious national problem.

Senator HILL. Anything you would like to add, sir?

Mr. CARLIN. No.

Senator HILL. Do you want to say "amen"?

Mr. CARLIN. I think President Mancuso has outlined the case very clearly for the association.

Senator HILL. That's what I meant by "amen."

You have brought us a most interesting and informative statement, most interesting and informative, and we certainly appreciate it.

Mrs. MANCUSO. Thank you very much.

Senator HILL. I want to thank you very much. Thank you.

Mrs. MANCUSO. Thank you, sir.

TITLE II-C, HIGHER EDUCATION ACT OF 1965

STATEMENT OF DONALD F. CAMERON, EXECUTIVE DIRECTOR, ASSOCIATION OF RESEARCH LIBRARIES

PREPARED STATEMENT

Senator HILL. Now, Mr. Donald Cameron, executive director of research libraries.

Mr. CAMERON. Mr. Chairman, thank you very much for the opportunity to come.

I would like to have this entered in the record.

Senator HILL. All right, we will have it appear in full in the record, Mr. Cameron.

(The statement follows:)

I am Donald F. Cameron, Executive Director of the Association of Research Libraries, the organization which I am representing today. The Association is composed of eighty institutional members, representing the larger academic and other libraries which collect comprehensively in support of teaching and research.

My particular purpose in appearing before the Subcommittee concerns Title II-C of the Higher Education Act of 1965. This title authorizes the Library of Congress to perform a variety of related services for the benefit of every library in the country.

For the purpose of illustration, I am sure that you are all familiar with the index of the New York Times, or Shepherd's Citator to legal literature. In these examples an indexing job is done once by highly competent personnel and the publication is issued and efficiently distributed to users. It would be intolerable to think of every library or law office in the country compiling its own indexes. Yet, this is precisely the problem in cataloging books that we are trying to relieve with a fully-funded program under Title II-C.

In 1901 the Library of Congress began the distribution of cataloging information as a by-product of adding books to its own collections. Because of limited budget at the Library, this information has been available for only about one-half of the books added to our research libraries each year. As it costs from three to five times as much to catalog a book without Library of Congress information, and requires linguistically skilled professional personnel rather than sub-professional or clerical labor, the resulting costs have become intolerable. In addition, this inefficiency has resulted in local processing delays which, last year, accounted for a cataloging arrearage of over 2.5 million books within the Association of Research Libraries alone.

The effect of Title II-C is to authorize the Library of Congress to expand its existing cataloging services, not only for the benefit of its constituents in government, but for the support of scholarship and research on the national level.

Fortunately, we are not seeking funding for an untried proposal. Title II-C, which has been funded for approximately nine months, has exceeded our collective expectations. Under the imaginative and vigorous implementation of the Library of Congress, Title II-C has produced dramatic results, even though the initial appropriations were approximately one-half the amount authorized by law. It may interest the Subcommittee to read some of the reports which we have received from a number of libraries across the country:

University of North Carolina: "If the savings realized on only Title II-C country titles is projected over a one-year period, the savings will amount to \$19,848.00. If the Title II-C program were expanded to the point where world-wide coverage was provided and copy made available for all foreign books purchased by this library, this figure would increase to approximately \$59,500.00, a considerable savings to this library . . ."

Dartmouth College: "Although conversion to LC classification is partially responsible, we have been able to reduce our general monographic catalogers from seven to two and to use the five professional positions for more efficient catalog department organization or to accomplish cataloging that was formerly going into arrearage . . ."

University of Chicago: "The benefits of this program rest not just in greatly improved utilization of this country's limited specialized manpower, but absolute benefits that can frequently not be secured in any other way, for example, in the cataloging of material in very difficult foreign languages where local capability simply does not exist . . ."

University of California: "We have admired the speed and precision with which the Library of Congress has instituted this new program, to a point where already we see a fifty-percent increase in the availability to use of Library of Congress printed cards . . ."

University of Washington: "The Head of our Catalog Division estimates that, while before Title II-C, catalog information was available for thirty to thirty-five percent of such acquisitions, now LC cards are available for approximately fifty percent and it is expected that this percentage will rise even more . . ."

In my visits I have seen dramatic evidence of the impact of this program. Libraries which formerly had to provide original cataloging for more than half their current receipts are now able to process a greater number of books with less staff and avoid the backlogs which used to keep needed materials from use by students for many months. I have seen significant savings in linguistically skilled manpower through the increased availability of cataloging copy from the Library of Congress.

Title II-C enjoys most of the elements for which we look in an ideal legislative program. It is germane in being related to the national interest in higher education. It authorizes services by a Federal agency which could not realistically be performed by any library in the private sector. In addition, the financial investment afforded by the Federal Government is returned many times by savings on the local level, as well as resulting in the most intelligent use of scarce manpower.

Mr. Chairman, and members of the Subcommittee, it is for these reasons that the Association requests your support in providing full funding for this program which has already produced such significant results. We have made a splendid start, but are only half-way toward the achievement of our objective. The pressures for library service being generated by a doubling of college student

enrollment in this decade, the acceleration of research, and the exponential increase in the growth of knowledge and the rate of publishing require a fully operational program under Title II-C, if libraries are to meet their responsibilities to society.

The original Act authorizes \$7,770,000 for Fiscal Year 1968. We earnestly hope that you will find this sum to be a wise investment in the libraries upon which higher education and the nation at large depend so heavily.

ASSOCIATION OF RESEARCH LIBRARIES

Mr. CAMERON. And I will summarize it because what I have to say is mainly repetition and reinforcement of what the Librarian of Congress said about title II-C.

Senator HILL. Yes.

Mr. CAMERON. I am Donald F. Cameron, executive director of the Association of Research Libraries, the organization which I represent. The association is composed of 80 institutional members, representing the larger academic and other libraries which collect comprehensively in support of teaching and research.

LIBRARY SERVICES

AUTHORIZATIONS

My particular purpose in appearing before the subcommittee concerns title II-C of the Higher Education Act of 1965. This title authorizes the Library of Congress to perform a variety of related services for the benefit of every library in the country.

The effect of title II-C is to authorize the Library of Congress to expand its existing cataloging services, not only for the benefit of its constituents in government but for the support of scholarship and research on the national level.

Fortunately, we are not seeking funding for an untried proposal. Title II-C, which has been funded for approximately 9 months, has exceeded our collective expectations. Under the imaginative and vigorous implementation of the Library of Congress, title II-C has produced dramatic results, even though the initial appropriations were approximately one-half the amount authorized by law.

Senator HILL. Did you call that to Dr. Mumford's attention?

Mr. CAMERON. Yes, we will; he is well aware of it, sir.

Senator HILL. I mean, that you were going to say that.

Mr. CAMERON. I am going to see him tonight in California.

Senator HILL. All right. You tell him I asked you to say that to him, will you?

SUCCESS

Mr. CAMERON. All right. I have a number of quotations from a number of libraries across the country, already reporting on the success of this project, and I will not bother you with them at this moment. They are from the University of North Carolina, Dartmouth College, the University of Chicago, the University of California, and the University of Washington, and they have been selected out of a much larger number.

ACHIEVEMENTS

Libraries which formerly had to provide original cataloging for more than half their current receipts are now able to process a greater number of books with less staff and avoid the backlogs which used to keep needed materials from use by students for many months. I have seen significant savings in linguistically skilled manpower through the increased availability of cataloging copy from the Library of Congress.

Title II-C enjoys most of the elements for which we look in an ideal legislative program. It is germane in being related to the national interest in higher education. It authorizes services by a Federal agency which could not realistically be performed by any library in the private sector. In addition, the financial investment afforded by the Federal Government is returned many times by savings on the local level, as well as resulting in the most intelligent use of scarce manpower.

SUPPORT FOR FULL FUNDING OF BUDGET REQUEST

Mr. Chairman, and members of the subcommittee, it is for these reasons that the association requests your support in providing full funding for this program which has already produced such significant results. We have made a splendid start, but are only halfway toward the achievement of our objective. The pressures for library service being generated by a doubling of college student enrollment in this decade, the acceleration of research, and the exponential increase in the growth of knowledge and the rate of publishing require a fully operational program under title II-C, if libraries are to meet their responsibilities to society.

The original act authorizes \$7,770,000 for fiscal year 1968. We earnestly hope that you will find this sum to be a wise investment in the libraries upon which higher education and the Nation at large depend so heavily.

Senator HILL. The truth is, the Library of Congress is the institution that has to do this job. Isn't that right?

Mr. CAMERON. That is it, and this is, we think, the best library legislation that has been put through in the last 25 years.

I am very happy to be able to present these remarks, and I thank you very much.

Senator HILL. We appreciate your being here.

You tell Dr. Mumford you made a very fine statement supporting him, will you?

Mr. CAMERON. Fine. I will quote you.

Senator HILL. Thank you, sir. Thank you very much.

TITLE I, HIGHER EDUCATION ACT OF 1965

STATEMENTS OF HOWARD WALKER, PRESIDENT, NATIONAL UNIVERSITY EXTENSION ASSOCIATION AND DIRECTOR OF STATE-WIDE ACADEMIC EXTENSION IN THE STATE OF KANSAS; ROBERT J. PITCHELL, EXECUTIVE DIRECTOR, NATIONAL UNIVERSITY EXTENSION ASSOCIATION; AND JAMES ARNOLD, DEAN OF UNIVERSITY EXTENSION, UNIVERSITY OF TENNESSEE

PREPARED STATEMENT *

Senator HILL. Dr. Howard Walker.

Mr. WALKER. Mr. Chairman, if I may, I would like to bring some of my braintrusters for a brief statement.

Senator HILL. All right, sir, glad to have you gentlemen with us.

Mr. WALKER. I appreciate your pressures on time, and if we may, we would like to have this written document submitted for the record.

Senator HILL. All right, sir.

(The statement follows:)

Mr. Chairman, members of the subcommittee, I am Howard Walker, President of the National University Extension Association and Director of Statewide Academic Extension in the State of Kansas. It is an honor and pleasure to appear before this distinguished committee today to testify on behalf of the appropriation of Title I of the Higher Education Act of 1965.

I represent the National University Extension Association, which is a nonprofit professional educational association with 134 members, consisting of 130 U.S. and 4 Canadian nonprofit public and private universities and colleges. The U.S. members represent the leading institutions of higher education with extension and continuing education programs in 49 states, the District of Columbia and Puerto Rico. Virtually all of these institutions are participating in Title I programs and have a vital interest in it.

Congressional concern for extension and continuing education programs is long-standing and extensive. The Library of Congress reports statutory authority for 150 such programs covering a period of more than 50 years. The great and dramatically successful agricultural extension program has been followed by programs for judges, judicial administrators, doctors, dentists, social welfare employees, federal employees, prisoners, immigrants, American Indians, state and local law enforcement personnel, mentally handicapped persons, the poor and the culturally deprived, scientists, engineers, businessmen, college professors, teachers, youth and many other individuals, groups and professions. Virtually every Federal department administers at least one such program, and one department—HEW—administers at least 69 programs. Congressional interest and commitment regarding the need for and the value of lifelong learning for every American have been firmly and repeatedly supported.

Congressional commitment to the solution of urban problems, while somewhat more recent, is just as pervasive. Health, housing, welfare, delinquency, urban renewal and transportation are a few of the major urban problems to which this committee and others have given much attention.

These concerns, which merged in the community service and continuing education programs under Title I of the Higher Education Act, have increased rather than subsided in recent sessions, as the distinguished members of this committee are fully aware. Yet for reasons which are not entirely clear, the program appears to be headed into a valley of fiscal stagnation which is not warranted by any objective assessment of need.

Because of its late funding in 1965 and the lengthy period of time required to appoint the National Advisory Council and to prepare rules and regulations, the FY 1966 appropriation of \$10,000,000 was repeated in the current fiscal year. The House has voted to continue the program at the same level for FY 1968 whereas the Administration's request was for \$16,500,000.

We believe that the existing pattern of appropriations is unfortunate for a number of reasons. First, recent news dispatches from Florida, Alabama, Ohio, Georgia, California, Mississippi, Michigan, New York, Pennsylvania, Illinois and other states indicate that urban problems are mounting and intensifying rather than subsiding. This summer the Administration is making strenuous efforts to put together last-minute crash programs to relieve some of the most urgent pressures. The cost of these programs is many times the additional funds requested for Title I.

No one can deny that the crash program is necessary this year. We recognize that community, like educational problems, are not amenable to instant solutions. We must take the long view for resolving many of these problems and continue to mobilize our know-how and resources. This the Title I program is designed to do. To maintain the current level of appropriations is to invite a continuation of the current situation rather than its abatement.

Second, continuation of the current appropriation will deny the benefits of the program to many communities and many eligible institutions of higher education which have not yet been able to participate.

In the current fiscal year, for example, only 1,806 communities were involved in Title I programs. We have no accurate measure of the extent of their individual involvements, but in most cases it is clear that involvement necessarily was only at introductory levels—some officials receiving training, some planning groups being brought together.

We do know, however, that only 1,806 communities were able to participate at any level out of the total of 56,507 counties, municipalities, townships, and special districts in the nation. It is difficult to conceive of a community today which is not in need of assistance in at least one of the program areas covered by Title I.

We see the same situation when we turn to institutions of higher education. In FY 1967, for example, 1,699 colleges and universities were eligible for participation in the program. Project proposals were submitted by 552 institutions but only 387 were funded under the existing appropriation. This means that it was necessary to deny 165 institutions funds for projects for which they were ready. Another 1,147 institutions, which were eligible for participation, could not have done so even if they had applied.

The proposals received by the states in FY 1967 would have required an appropriation of \$22,322,000 in federal funds or \$13,323,000 more than was available for projects under the \$10,000,000 appropriation.

The states estimate that they would have needed \$33,007,563 in federal funds in FY 1967 if they had been able to encourage institutional and community participation instead of having to assume a passive role because of the \$10,000,000 level of funding—one-fifth of the amount authorized.

Third, only a dent has been made in dealing with the problem areas covered by the authorizing legislation. In the entire country during the first two fiscal years of the program the total of state and federal funds allocated for resolving community problems in the area of housing was \$1.6 million; in youth opportunities \$1.2 million; in transportation \$468 thousand; in employment \$602 thousand; in land use \$1.9 million. These broad problem areas conceal the fact that some of the subareas, such as juvenile delinquency and crime prevention, are almost as broad as the overall categories, and each is worthy of extended effort in Title I programming. However, if we maintain only the current level of funding, we will discover that the gap between need and solution is widening instead of narrowing.

Fourth, inflationary pressures are as real for this program as for any other organized activity. Salaries in business, government and education rise each year and costs of materials inexorably increase. If we were to have the same level of appropriations in succeeding years, we would actually be regressing in our attack on community problem-solving.

Finally, the current international crises are more related to Title I than may at first be apparent. At the beginning of World War II, America found itself seriously short of people trained in community problem-solving as well as in a wide variety of occupational skills. Our colleges and universities not only offered training to military specialists, but also carried on extensive programs in occupational skills and a limited number in military government. It was too late to begin the training of public officials who then were urgently needed at their jobs. Should another emergency arise, a citizenry trained in community problem-solving is going to be utterly indispensable—the dislocations created

by the next emergency will be incomparably more severe than anything this country has previously encountered. In Vietnam today we are beginning to understand that we have only begun to learn about these problems.

This committee has heard much testimony from the field of health. Our medical doctor friends say that if we are really hurting they will come to see us. Our communities and our colleges are really hurting for the \$16.5 million appropriation for Title I of the Higher Education Act of 1965. That is why we are here.

Thank you for having us.

INTRODUCTION OF ASSOCIATES

Mr. WALKER. On my right is Dr. Robert Pitchell, executive director of the National University Extension Association, and on my left, my former neighbor when I was in Mobile, former senator in the great State of Tennessee.

Senator HILL. Good.

Mr. WALKER. State senator, and dean of university extensions, James Arnold.

I will skip through this.

URBAN PROBLEMS IN COMMUNITY SERVICE AND EDUCATION PROGRAMS

I would like to present only three or four of the major points. I will skip to the middle part of page 2. It does describe that there are 130 member institutions, the larger and more well-known universities in the nation.

We mentioned in pages 1 and 2 the recent concerns about the urban problem in this country. We think that title I of the Higher Education Act of 1965 is a community officer training program, you might say. We deal with the mayors, the councils, and the local constituencies.

Now, these problems in the urban area, being recent, have increased, we think, rather than subsided, in recent sessions, yet for reasons which were not entirely clear, the program appears to be headed into a valley of stagnation that is not warranted by any objective assessment of need.

HOUSE ALLOWANCE AND BUDGET REQUEST

Skipping further, the fiscal year 1966 appropriation of \$10 million was repeated this year. The House of Representatives voted to continue the program at that same level, for fiscal year 1968, whereas the administration's request was for \$16.5 million.

Senator HILL. They did not allow the budget you estimated.

Mr. WALKER. That is right, sir. We believe the existing pattern of appropriations is unfortunate for a number of reasons, and these we list on page 3, following, throughout.

CRASH PROGRAM COSTS

You will have noted the recent news dispatches about the problems in the cities, and in Florida, and Alabama, and Ohio, you go on down—

Senator HILL. All over the country, different places.

Mr. WALKER. And it is our opinion that this summer, the administration is making serious efforts to put together some last-minute crash programs to relieve some of the most urgent pressures. The cost of these programs, of course, is many times the funds we are requesting for title I, Higher Education Act, and no one can deny that the crash program is necessary this year. We recognize that community, like educational problems, are not amenable to instant solutions, and we feel that to maintain the current level of appropriation, one-fifth of the authorized amount, is to invite a continuation of the current situation, rather than to ease it.

INHIBITIONS OF CURRENT PROGRAM LEVELS

The second point is that continuation of the current appropriation level will deny the benefits of the program to many communities and many eligible institutions of higher education which have not yet been able to participate, and we are thinking more of the smaller institutions.

Senator HILL. Yes.

Mr. WALKER. In the current fiscal year, for example, only 1,806 communities were involved in title I programs.

We don't know any accurate measure of the extent of their individual involvements, but in most cases, it is clear that involvement necessarily has been only at introductory levels. Some officials have received training, some planning groups have been brought together.

ELIGIBILITY AND FUNDING

We do know that only 1,806 communities were able to participate at any level out of the 56,507 counties, municipalities, and townships we might call communities. It is difficult to conceive of any community today that is not in need of assistance in at least one of the program's areas covered by title I. We see the same situation when we turn to institutions of higher education.

In fiscal year 1967, we had 1,699 colleges and universities being eligible. Project proposals were submitted by 552 colleges, but only 387 were funded under the existing appropriation.

This means that it was necessary to deny 165 colleges funds for projects for which they were ready. An additional 1,147 institutions which were eligible could not have participated, even if they had applied, but these colleges are now ready to apply.

COMMUNITY ASSISTANCE

The word is getting back to the communities, to the grassroots, and if I may, I would like to just pick out one statement of the mayor of Statham, Ga.

As a result of the University of Georgia's project, for example, the mayor and his council now know where to go for information and advice, and have better understanding of the decisionmaking process. He does not feel, however, that the course he took went deep enough. This is a quotation of his: "The Department of Agriculture has done won-

ders for the farmers in this area. Why can't the same type of service be made available to smalltown mayors who can't afford to hire people trained in the field of public administration?

"I can get expert advice on the grass in my yard, but about the problems and decisions affecting seriously the lives of a thousand people, I have no resources to turn to."

Now, he does have a modest source.

ESTIMATED FUND REQUIREMENT

Skipping further, sir. The State estimated that they would have needed \$33,007,563 in Federal funds in fiscal year 1967 if they had been able to encourage these colleges and universities to participate instead of having to assume a passive role because of the \$10 million level funding. I repeat, one-fifth of the amount authorized.

INFLATIONARY PRESSURES

I will skip the third point, which is also important, and would move to the fourth, which is obvious, I suppose: Inflationary pressures are just as real. If we were to have the same level of appropriation in succeeding years, we would actually be regressing in our attack on community problem solving through working with the mayors' city commissioners, county commissioners, and so on.

CURRENT INTERNATIONAL CRISES

Fifth and finally, the current international crisis is more related to title I than many people at first may know about.

COOPERATIVE TRAINING PROGRAMS

Now I will skip further. In Vietnam today, we are beginning to understand that we have only begun to learn about the real problems in a community. This committee has heard much testimony from the field of health, and if I might use this homily, our medical doctor friends say to us that if we are really hurting, they will come to see us. Our communities and our colleges are really hurting for the \$16½ million appropriation for title I. That's why we are here, and thank you for having us, sir.

Senator HILL. Anything you gentlemen would like to add?

Mr. ARNOLD. One comment, because as I have listened to this testimony this morning, under title I, the university can take the information, for example, that you referred to in regard to heart cases, and presently in Tennessee, Vanderbilt Medical College, and the higher medical college, the University of Tennessee medical units are working cooperatively to do this very thing.

Just earlier, the school board situation was discussed. All of the State colleges in Tennessee and Peabody are working together on a training program to upgrade school board members, and we think this is important.

So we think under title I that we can help the other programs. That we concur in the need for money, but I think we can help them get the information.

Senator HILL. That is good. We certainly appreciate your presence, and your most informative testimony.

Mr. WALKER. May I leave with you a copy of our 50th anniversary publication, from an alma mater we are both interested in?

Senator HILL. Thank you. I appreciate this very, very much, and we sure appreciate your presence and your splendid testimony here this morning.

Mr. WALKER. Thank you, sir.

Senator HILL. Thank you very much.

GEORGETOWN CAMPUS UTILITY PLANT

STATEMENT OF JAMES GARNER DEANE, WASHINGTON, D.C.

PREPARED STATEMENT

Senator HILL. All right, now, Mr. James Garner Deane.

Mr. DEANE. Mr. Chairman, I certainly appreciate your courtesy in allowing me to appear very briefly.

Senator HILL. Thank you, sir.

Mr. DEANE. My name is James G. Deane, and I live in Washington at 4200 Cathedral Avenue, NW. I am a trustee and conservation chairman of a nonprofit civic organization, the Committee of 100 on the Federal City, which was founded in 1923, to encourage the wise planning and development of the National Capital, and I am also chairman of the Potomac Valley Conservation and Recreation Council, which represents a number of conservation and other groups.

I am going to submit, sir; the prepared statement, with some exhibits attached.

Senator HILL. All right, sir; you do that, and we will have it appear in full in the record, sir.

Mr. DEANE. Thank you, sir.

(The statement follows:)

Mr. Chairman, my name is James G. Deane, and I live at 4200 Cathedral Avenue N.W. here in Washington. I am grateful for this opportunity. I asked to appear as an individual, but I happen to be a trustee and conservation chairman of a non-profit civic organization, the Committee of 100 on the Federal City, which was founded in 1923 to encourage the wise planning and development of the national capital. I am also chairman of the Potomac Valley Conservation and Recreation Council, another non-profit body representing a number of organizations and conservation leaders in the Potomac Basin.

I firmly believe that federal programs and federal expenditures should not be contradicting one another. I believe also that our governmental agencies should have administrative procedures and safeguards that will help to prevent contradictions. And it seems important that these procedures and safeguards should embrace the projects being carried out through grant programs such as those for educational and health facilities which come within the jurisdiction of this subcommittee.

I requested this opportunity because, with the assistance of federal funds administered by the Department of Health, Education and Welfare, Georgetown University plans to construct a large central heating and air-conditioning plant at a site which many believe has been badly chosen and will result in grave injury to one of Washington's most important and valuable public parks, to the community, and to the principles of sound community planning.

Georgetown University has an important place in the community, and I am sure all thoughtful citizens are sympathetic toward its needs. The university also, however, has a sizable campus most of which is as yet not occupied with

buildings. The campus therefore has ample room for a heating and cooling plant at some location which will not harm either neighboring properties or the campus itself.

American University's heating plant is almost in the center of the campus, and new buildings partly being built with funds recommended by this committee are rising in its immediate vicinity. But for some reason that has not been stated, Georgetown University's planners and architects have determined on putting the new campus utility plant at the extreme edge of the campus, as close as possible to Glover-Archbold Park, a beautiful, quiet, natural stream-valley park.

Glover-Archbold Park is part of the National Park System. Much of it was donated to the people of Washington and of the United States by two generous residents of Washington, Mrs. Anne Archbold, who lives directly across Reservoir Road from Georgetown University, and the late Charles Carroll Glover, Sr., one of the leaders to whom we can be grateful for the creation of Washington's park system.

Mrs. Archbold is a member of the Committee of 100 on the Federal City, as is Charles Carroll Glover, Jr., the late Mr. Glover's son. Both have long been anxious that this remarkable park be protected from encroachment and damage, so that it can continue to provide pleasure and refreshment of the kind we need increasingly in a crowding society. We need to save a few places of escape from constant noise and from bricks and pavement, places where we can reestablish contact with nature. Glover-Archbold Park is one of the last and best places of this kind that Washington has.

There are a number of specific reasons why the current plan for the university's heating-cooling plant is seriously objectionable. They include the following:

1. The site is on a steep wooded slope shared with the park and extremely vulnerable to runoff, siltation and water-table damage that would be caused by the project.
2. The site is conspicuously difficult, one the university itself has in the past called uneconomic for any campus structure. The campus has other potential sites much more accessible, more economical and more logical functionally. One such site, well removed from the park, was actually intended when the project was approved for Public Health Service subsidy. Substituting the present costly site imposes an improper charge on the taxpayer as well as an unnecessary detriment on the community and on an irreplaceable public asset.
3. The site entails cutting two sewer lines more than 300 feet into the park, at this point only some 500 feet wide. The park already has suffered damage from other sewer construction. The fine remnant of mature forest, including one of the park's best beech groves, in the area of the proposed plant site urgently needs and deserves to be kept intact.
4. A service-fueling-parking lot and service road, entailing cuts and fills and flanked by a long retaining wall, would be close to the park line. Motor vehicle noise, fuel oil smell and a trash hazard would be inflicted on a part of the park now roadless, tranquil and secluded.
5. The plant itself, 162 feet long, 96 feet deep and at least 89 feet (the equivalent of nine stories) high not counting exposed foundations or stacks, would tower above the park at a location only 50 or 60 feet from the park boundary. It would constitute an alien and ugly factory-type intrusion on a now refreshingly scenic setting.
6. The plant's five large fan-type cooling towers, shielded only by louvered metal screen walls on the upper level of the building, would disseminate objectionable noise across the entire breadth of the narrow stream valley, inflicting serious environmental injury on both the park and nearby homes. According to an on-site study by the Public Health Service based on the equipment bid specifications, the noise pressure levels would exceed the maximums permitted under District of Columbia zoning regulations of industrial districts. The campus zone is residential. Even the university has stated that the plant was planned expressly to direct noise into the park.
7. The park would be subjected to foliage-damaging stack emissions at tree-top height, a particular hazard in a narrow wooded valley where mists are likely to accelerate chemical reactions and photochemical smog is unlikely to be readily dispersed.
8. The park would be exposed twice to direct construction damage, because the plant would be constructed in two stages, the first this year and the second

about 1975. The plans invite park encroachment to accomplish the second construction stage, because the first-stage structure would virtually block campus access to the rest of the site. Second-stage construction would also presumably obliterate landscape planting promised for the narrow gap between the initial structure and the park.

One would, I am sure, expect that in considering the commitment of federal grants to construction of university facilities, the Department of Health, Education, and Welfare would examine carefully the campus' relationship to its surroundings, and would seek to encourage selection of sites averting adverse impacts on them. But in this case this does not seem to have happened.

I am told that five Public Health Service grants and three Office of Education grants are involved in the project, and that the estimated cost is some \$2.5 million. I have not been able to establish the federal share, or details of the Office of Education interest. However, I do know that the Public Health Service has devoted substantial attention to the project. Yet it appears to have given only incidental attention to the site.

It would seem urgent to make sure that the noise, air pollution, visual impact and other adverse implications of a large boiler and air-conditioning installation be focused as far as possible away from a place especially vulnerable to environmental detriments. Yet, although the Public Health Service has broad environmental responsibilities as well as detailed architectural and engineering review procedures, and although Assistant Surgeon General Pond stated in a March 21 telephone interview that instituting an environmental checklist was a very good suggestion, the service now uses no such checklist and, by its own admission, has made no systematic environmental review of the Georgetown University project and its site.

I would like to mention some of the efforts that have been made in this connection, and the results.

On February 13 in a telephone interview and on February 14 by letter to the Bureau of Health Manpower, on March 6 in a conference with Dr. Joseph A. Gallagher, deputy director of the bureau, and others, on March 13 and 21 in telephone interviews with Mr. Pond and on April 3 in a meeting with an aide to Secretary Gardner and a letter to the Secretary, and in numerous other contacts with PHS officials an environmental review has been urged strongly on behalf of the Committee of 100.

On March 30 an on-site noise study was made, at my request, by the service's National Center of Urban and Industrial Health, Cincinnati, with a resulting report showing that the specified plant equipment will produce not only seriously objectionable noise in Glover-Archbold Park but levels exceeding the limits for boundaries of Washington manufacturing districts. The center sent the report to the Bureau of Health Manpower and the National Institutes of Health, and its existence is known to Secretary Gardner's office. But apparently it has been ignored by administrators.

It has been startling to discover how little the service has seemed to be concerned about many of the aspects of the project. When I first talked with PHS reviewing architects, for example, I found them unaware even that the plant site was next to a park. Dr. Gallagher on March 6 expressed surprise, indeed, that the project had been shifted away from a central-campus site which, he said, had been the one designated when the grants were approved. He conceded that this posed a significant question. Yet apparently neither he nor any other administrator has actually taken up this question and found out why the change was made, by whom it was authorized, and whether it was justifiable.

At a hearing of the District of Columbia Board of Zoning Adjustment on March 22 I introduced documentary evidence of striking dimensional and site differences between plans submitted in March to PHS and the plans then pending before local agencies. The PHS submittals showed a structure some 25 feet higher, and also closer to the park, than shown in the drawings awaiting local approval. The PHS submittals also showed partly exposed smokestacks and cooling-tower stacks protruding above the building, whereas locally submitted plans showed completely shielded stacks. Soon after the hearing the university submitted altered plans to PHS conforming in height and site to the locally pending plans but continuing to show partially exposed cooling towers.

I understand that on June 2 PHS received what ostensibly are the final structural plans, and that on these the towers no longer appear above the building walls. But one must wonder just how final these drawings are.

No changes have been made, I am told, in the equipment specifications that were based on the earlier PHS submittals, and on which bids were received early in March. All the equipment, in fact, is now under contract. Yet architects and engineers have expressed doubt to me that the equipment can be accommodated in the smaller structure, and without exposed stacks.

As far as I know, PHS has made no investigation of the conflicting submissions, however.

Another strange fact has been the service's willingness to let its approvals proceed seemingly without concerning itself with the status of local clearances, until this week. A few days ago, I am told, on university assurances that essential clearances had been obtained PHS was on the verge of letting the project go to construction bids. After being informed by my committee that the project still lacked a Board of Zoning Adjustment order, Fine Arts Commission approval, a building permit and a National Park Service permit to encroach with sewer construction, the service decided on postponement. But why have the built-to-order-equipment contracts already been awarded?

Yet another significant question concerns the District of Columbia zoning regulations. These require that any campus use be "so located that it is not likely to become objectionable to neighboring property because of noise, traffic, number of students, or other objectionable conditions." They also require submission of, and presumably reasonable conformity with, a campus master plan, and Dr. Gallagher told me on March 6 that in the absence of a properly approved master plan (and also Fine Arts Commission approval) the grants would not go forward. The project clearly defies the location rule, and the master plan has been considered by neither the Board of Zoning Adjustment nor the National Capital Planning Commission, was not submitted with the university's project applications and shows the plant in a different location. Why are the grants going forward?

While neglecting appropriate inquiries itself, the service also has been impeding the fact-finding of citizens. Two PHS administrators were prevailed upon by the university to deny access to plans and other information to my committee (and, one presumes, any similar groups). Has the service asked what the university has to hide?

Eighteen national and local organizations are on record in opposition to the presently intended site. I hope, Mr. Chairman, that this fact will be considered evidence of a substantial public issue and that a way can be found to resolve it in the public interest. I should like to submit several documents for the record. Thank you.

The following organizations are on record with the Board of Zoning Adjustment of the District of Columbia as opposing the location of a Georgetown University heating-cooling plant next to Glover-Archbold Park:

- National Capital Committee, American Institute of Architects
- American University Park Citizens' Association
- Audubon Naturalist Society of the Central Atlantic States, Inc.
- Burleith Citizens' Association
- Cathedral Heights-Cleveland Park Citizens' Association
- Citizens Association of Georgetown
- Citizens' Committee on Natural Resources
- Committee of 100 on the Federal City
- Foxhall Community Citizens Association
- Glover Park Citizens' Association, Inc.
- Izaak Walton League of America
- National Capital Area Federation of Garden Clubs
- National Parks Association
- National Wildlife Federation
- Rachel Carson Trust for the Living Environment, Inc.
- Spring Valley-Wesley Heights Citizens Association
- Wilderness Society
- Wildlife Management Institute

REPORT ON NOISE SURVEY, PROPOSED SITE OF POWER PLANT, GEORGETOWN
UNIVERSITY, WASHINGTON, D.C.

(By Herbert H. Jones)

OCCUPATIONAL HEALTH RESEARCH AND TRAINING FACILITY, 1014 BROADWAY,
CINCINNATI, OHIO 45202, APRIL 1967U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE,
NATIONAL CENTER FOR URBAN AND INDUSTRIAL HEALTH, OCCUPATIONAL HEALTH
PROGRAM

FOREWORD

The survey was made on March 30, 1967, by Herbert H. Jones, Sanitary Engineer, Director, Engineering Section, Occupational Health Program, Cincinnati, Ohio. The study was initiated at the request of Mr. James G. Deane, Chairman, Potomac Valley Conservation and Recreation Council. The purpose of the survey was to determine if there would be a community noise problem resulting from the location of the proposed power plant of Georgetown University adjacent to the Glover Archbold Parkway.

SUMMARY

The specifications for maximum permissible sound pressure levels for the proposed power plant have been compared with the District of Columbia Zoning Regulations and present background sound pressure levels in the Glover Archbold Parkway. The District of Columbia Zoning Regulations are exceeded by 8 to 20 decibels. The background sound pressure level in the center of Glover Archbold Parkway is exceeded by 9 to 27 decibels. It is believed that the potential noise problem should be given some consideration in the approval of the proposed site.

DESCRIPTION OF SITE

The power plant site is approximately fifty feet from the boundary line of the Glover Archbold Parkway, an area which has been set aside as a natural park by the National Park Service, Department of Interior. The Parkway starts at the Potomac River and follows a deep valley northward along the western boundary of the Georgetown University. At the site of the proposed power plant the Parkway is approximately 550 feet wide and extends across a deep valley which has a virgin grove of beech trees. At the western edge of the park is a residential area.

OBSERVATIONS

On March 30, 1967 magnetic tape recordings were taken in the park using a Nagra II portable tape recorder and a Bruel and Kjaer Precision Sound Level Meter, Type 2203, equipped with Type 4131 condensor microphone. This equipment was calibrated with a Bruel and Kjaer, Type 4220, Pistonphone with this signal being recorded and used as a reference signal. The tape was analyzed using the Type 2203 sound level meter and Type 1613 octave filter set.

Measurements were made at the boundary line of the park at about the middle of the proposed power plant location, at the bottom of the valley approximately 275 feet from the boundary and near the boundary on the far side of the park at a distance of approximately 550 feet. These measurements were made between 11:30 AM and 1:30 PM and the results given below represent the average background sound pressure levels excluding aircraft flyover noise.

Average background sound pressure levels, db re 0.0002 μ bar

Location	Over- all level	Center frequency of octave bands in Hz							
		63	125	250	500	1000	2000	4000	8000
Boundary line.....	58	56	52	40	39	31	20	12	11
Center-275'.....	57	54	52	41	35	31	20	13	11
Far boundary line.....	59	57	53	42	38	32	21	14	10

The background sound pressure levels are what would be expected for a rural or suburban area with little or no traffic during the daytime. At this particular location there are aircraft flying overhead on take-off from National Airport. From the limited amount of time spent at the site it was not possible to determine the number of flyovers per day or week. The maximum sound pressure levels produced from aircraft flyover were measured as follows.

Maximum sound pressure levels from aircraft flyovers, dB re 0.0002 μ bar

	Over-all level	Center frequency of octave bands in Hz							
		63	125	250	500	1000	2000	4000	8000
Jet.....	81	74	75	73	77	71	62	50	38
Propeller.....	86	84	80	76	77	74	66	53	41

DISCUSSION OF MEASUREMENTS

The design specifications for the proposed power plant specifies a maximum permissible sound pressure level at 550 feet as shown below.

Design sound pressure level dB re 0.0002 μ bar

Distance (feet)	Octave bands, Hz							
	20 to 75	75 to 150	150 to 300	300 to 600	600 to 1,200	1,200 to 2,400	2,400 to 4,800	4,800 to 9,600
Night.....	57	47	39	32	28	25	22	21
Day.....	63	55	47	41	37	35	33	32

Using the above data for daytime and calculating sound pressure levels at other distances would give sound pressure levels at various distances as shown in the next table.

Design sound pressure levels at various distances, dB re 0.0002 μ bar

Distance (feet)	Octave bands, Hz							
	20 to 75	75 to 150	150 to 300	300 to 600	600 to 1,200	1,200 to 2,400	2,400 to 4,800	4,800 to 9,600
550.....	63	55	47	41	37	35	33	32
275.....	69	61	53	47	43	41	39	38
50.....	83	75	67	61	57	55	53	52

The District of Columbia Zoning Regulations, Chapter 6, Section 6101, sets the following maximum sound pressure levels for boundaries of Commercial-Light Manufacturing Zones.

Maximum sound pressure level in decibels 0.0002 μ bar

Octave band in cycles per second (Hz) :

0- 74	72
75- 149	67
150- 299	59
300- 599	52
600-1199	46
1200-2399	40
2400-4800	34
Above 4800	32

The maximum permissible levels in the specifications exceed the limits set by the District of Columbia Zoning Regulations by the following amounts.

Sound pressure levels	
Octave bands (Hz.) :	
20- 75	11
75- 150	8
150- 300	8
300- 600	9
600-1200	11
1200-2400	9
2400-4800	19
4800-9600	20

The maximum permissible levels as given in the specifications also exceed the background sound pressure levels in Glover Archbold Parkway by the following amounts.

	Distance from site in feet		
	550	275	50
20 to 75	6	15	27
75 to 150	2	9	23
150 to 300	5	12	27
300 to 600	3	12	22
600 to 1,200	5	12	26
1,200 to 2,400	14	21	32
2,400 to 4,800	19	26	41
4,800 to 9,600	22	27	41

CONCLUSIONS

The maximum permissible sound pressure levels as given in the specifications for the proposed power plant exceed the limits set by the District of Columbia Zoning Regulations and the present background noise levels in the Archbold Parkway by a considerable amount. It is believed that this should be given serious consideration before approval is given for the power plant to be located at the proposed site.

COMMITTEE OF 100 ON THE FEDERAL CITY,
Washington, D.C., April 3, 1967.

HON. JOHN W. GARDNER,
Department of Health, Education, and Welfare,
Washington, D.C.

DEAR SECRETARY GARDNER: We wish to urge your personal examination of a Public Health Service supported project which as matters now stand is, in our opinion, doing grave injury to the principle of sound community planning here in Washington.

Georgetown University plans to erect a central heating and air-conditioning plant with the aid of substantial federal funds allocated to expansion of the university's medical-dental facilities. The site chosen is a steep stream-valley hillside which the campus shares with Glover-Archbold Park, one of the most notable of Washington's natural park areas.

The campus has adequate space elsewhere for such a facility. Moreover, there is every reason to exempt one of the capital's few relatively intact and unspoiled wooded stream valleys from detriments of the kind a large heating-cooling plant is bound to inflict upon it. We refer to noise, air pollution, ugliness, truck intrusions and direct physical damage to the terrain and the park.

Unfortunately, as we have discovered to our great surprise, your grant procedures omit provision for environmental review, and PHS evidently leaves to local agencies virtually all responsibility along this line, however indifferently such responsibility may be exercised. We have urged, in contacts with some of the administering PHS officials, that at least in this case appropriate weight be given to the prospective impacts, because of the especially sensitive location. But this does not seem to be happening.

We are convinced that neither the PHS grants program nor the university is likely to gain in public esteem from an intention that appears both thoughtless and unnecessary.

Several aspects of the project will, we think, be of particular interest to you. One is the fact that the chosen site is not in conformity with the university's own master plan, as filed with official agencies in accordance with District of Columbia regulations. That plan shows a different site, although that too is needlessly near the campus edge and the park. Even more significant, however, is the fact that when the PHS grants were approved in 1965 this apparently was done on the basis of still another site, one a substantial distance from the park. It has not been explained adequately, at least to us, how that site came to be abandoned or why the change apparently has been accepted without serious question by PHS.

Another salient fact is that the university itself hitherto has declared the presently intended site uneconomic. I enclose a copy of a letter containing this declaration, written in May, 1965, to an official of the National Capital Planning Commission by the university's present vice president for planning. (We are informed that in excess of \$200,000 has been estimated merely for site preparation for the project as now pending.) The unavoidable inference from the university's change of intent is that with the promise of federal subsidy an uneconomic site no longer need be considered one to be avoided.

This altered plan contradicting park values conflicts with a significant prior public commitment. Glover-Archbold Park was created more than 40 years ago as the result of large gifts of land by two generous Washington citizens (one of whom, Mrs. Anne Archbold, a member of this Committee, is still living). Additions were made under the Capper-Cramton Act, which was devised to preserve just such natural stream valleys in the national capital area. Congress accepted the land donations by special acts, and Secretary Udall, among many, has personally stressed the urgency of protecting the park's beauty and tranquillity as belonging to a distinctive and nationally important Washington possession.

Glover-Archbold Park is, of course, part of the National Park System, and the Park Service ranks it second as a Washington natural asset only to Rock Creek Park. In certain respects, such as being functionally roadless and possessing an extraordinarily dense breeding bird population which is under systematic study, it stands by itself.

The conflict most immediate and striking, however, involves the project's detailed plans themselves, and we invite your special attention to this subject. As evidenced by copies of tracings accompanying this letter, while submitting to PHS one set of drawings showing a facility more than 115 feet high, located 50 feet from the park and with partly exposed smoke stacks and cooling-tower stacks, the university has submitted to local agencies drawings showing a structure 88.5 feet high, located 60 instead of 50 feet from the park, having completely screened stacks and lacking a truck-backaround platform a few feet from the park shown on the PHS submittals.

The university stated on March 22 to the District of Columbia Board of Zoning Adjustment, which must grant permission before erection of any campus structure, that the smaller one will be built. It is this smaller structure that the board, we are told, subsequently approved, although no formal order to this effect has yet been issued. The same plan was submitted to the Commission of Fine Arts, whose final action is still pending, and to the National Capital Planning Commission, which on the basis of it recommended approval of the project subject to certain provisos.

We think it noteworthy that the university has made only the latter plan public, and that at the March 22 hearing it both failed to offer any explanation regarding the different submittal to PHS and strongly objected to the introduction of information about that submitted into the hearing record. The information, including tracings from the university's drawings, was introduced by this Committee.

Despite the commitment made to the Board of Zoning Adjustment, we are informed that the university already has opened bids on the plant equipment based on the drawings submitted to PHS, and intends to award the equipment contracts shortly.

We think PHS should have an urgent interest in obtaining an explanation of this situation.

A number of national and local organizations have signified their opposition to the university's present intention and to any site detrimental to the park.

Neither set of drawings is acceptable from the standpoint of proper park protection or, in our opinion, in the framework of the District of Columbia's zoning regulations, which require that any campus facility be so located that it is not likely to become objectionable to neighboring property because of noise, traffic, number of students or other objectionable conditions.

We request, under the circumstances, that all PHS approvals concerning the project be immediately suspended, that an investigation be made of the conflicting drawings and the project's environmental implications, and that you consider whether the federal grants allocated to the proposed plant should be cancelled.

We shall be glad to provide more detailed information.

Yours sincerely,

JAMES G. DEANE,

Chairman, Subcommittee on Conservation and Park Protection.

MAY 13, 1965.

Re Georgetown University 1985 Development Plan

Mr. WILLIAM McINTOSH.

*National Capital Planning Commission,
1701 Pennsylvania Avenue NW., Washington, D.C.*

DEAR MR. McINTOSH: On behalf of Georgetown University, I am enclosing documents with information additional to the data and plans contained in the University's Brochure submitted on 31 December 1964. This additional information was requested by the Commission's Committee on Universities during the hearing on 1 March 1965.

In detail the newly submitted documents are:

Exhibit 2F, contains information on growth, giving the foreseeable situation by 1985. This Exhibit was explained during the Full Commission's hearing on 4 March 1965.

One of the questions raised by the Commission was: Has Georgetown University in its 1985 Plan made full use of recent changes for Universities in the Zoning Regulations? This question is related in particular to the recent increase in permissible floor area ratio to 1.8. The University is using the recent changes to the fullest practicable extent in its 1985 and future plans. In this regard, I should like to emphasize certain conditions and factors which have guided the University in its planning to achieve the most efficient land use.

The Zoning Regulations prescribe that maximum land coverage will be 60% in our instance. Our present area is 110 acres approximately. Hence, we will eventually have 33 acres of green or other open space on the entire campus. This will include necessary roads, sidewalks, lawns, athletic, parking and other areas. Much of the area on the plans which were submitted to the Commission is already unusable for various reasons. The University program objectives include physical education and recreation and sports as well as other types of education and recreation. The area available for athletic fields has been reduced to approximately 17 acres as compared to a recognized norm of 35 acres for intercollegiate and intramural athletic programs. During a site visit the members of the Commission were able to observe that the steep hillsides around the Observatory and the athletic fields are not suitable for economic construction. Further, most of the larger playing areas are on filled ground, the fill being over 60 ft. deep. This land does not lend itself well for School constructions.

The whole Georgetown civic community occupies about one (1) square mile and the population was estimated to be 11,600 in 1960. The Georgetown University has a peak population of students, faculty, administrative personnel, visitors and patients of about 10,000. About half of this number are students who are young and require some outdoor recreation. A brief examination of the map of the whole area will reveal the paucity of green space for recreation and athletic games. We have estimated the population density on the University Campus to be 1 person for every 440 sq. ft. as compared to 1 person for every 2400 sq. ft. in the civic community.

The University has had to develop its own internal zoning plan. This is normal and required since efficient operation of the educational facilities and the prevention of mutual interference makes it necessary to assign specific areas to certain functions. This internal zoning was demonstrated on Exhibit 2D which was previously presented to the Commission.

The foregoing also responds to the question raised by the Commission as to the size of the areas assigned to outdoor physical education. In this connection, I should like to mention two significant events of current concern. Firstly, the construction of a new 177,000 sq./ft., million volume, library on campus necessitates the relocation of tennis courts to a part of the present outdoor athletic space. This will reduce playing fields by 49,000 square feet (1.2 acres). I am sure that the Commission appreciates that all the present green fields serve multiple purposes for fall, spring and summer sports. Second, the future expansion of the gymnasium will also reduce outdoor athletic space still further.

The Commission also requested further information on parking spaces. Exhibit 2D amended, shows parking space allocations. The Medical Center and General University combined have 1722 parking space, not counting curb parking. Under the present code regulations we require only 1660 spaces. By 1985 the Medical Center will have space for 2000 cars and the General University will have space for 1650, all off street, and not counting curb parking. This will be well in excess of code requirements.

I shall be glad to furnish any additional information required and please let me know if I can be of further assistance.

Sincerely,

T. BYRON COLLINS, S.J.,
Business Vice President.

COMMITTEE OF 100 ON THE FEDERAL CITY,
Washington, D.C., June 16, 1967.

Hon WILLIAM WALTON,
Chairman, Commissioner of Fine Arts,
Washington, D.C.

DEAR CHAIRMAN WALTON: On April 17 we wrote you about the serious demerits of the plans for the proposed Georgetown University heating-cooling plant and the discrepancies in the drawings submitted to various agencies. Examination of the model requested by the commission on April 19 has disclosed new discrepancies which we believe the commission will view most gravely.

According to the university's drawings numerous details of the model are incorrect. It shows incorrect building height, an incorrect grade at the east building wall, and an incorrect relationship to the athletic field and observatory. The parking area retaining wall does not conform to recent detailed drawings. Some trees are incorrectly placed. Some should not be shown because we believe they cannot survive construction, including the second stage to which the first will all but block access except at the park line. If the commission's specification regarding grade changes was meant to include existing grades, the model fails to provide this important information. We must assume in their absence that the stacks and cooling towers are to remain permanently invisible despite the contrary plans submitted to the federal government in March and the doubts of government engineers.

The solid screen walls obscure the fact that the real, louvered walls will be sieves with respect to the excessive noise that is to pour into the park.

The most serious failure is the omission of the property line along the park, since the project's adverse relationship to the park is the central problem. If the near edge represents this line it is a 33 percent error. It also is unfortunate that the model does not show both more of the park and more of the campus.

The model's salient net effect is a deceptive downplaying of the overpowering height and mass and prospective destructiveness at the park border.

Thus the model discredits itself. We note also that the April 12 drawings submitted to the commission, like those of last October, are outdated and rudimentary schematics, in various respects not in agreement with later drawings. Yet ostensibly final plans are now in the hands of the Public Health Service.

Either there has been astonishing carelessness or there has been an attempt to mislead the commission. In either case we assume the commission will insist on being given responsible and full information. This, we submit, should include an accurate, topographically detailed site plan extending from the central portion of the campus to the center of the park. This would enable the commission to evaluate both the adverse relationship of the present plan to the park and the feasibility of a site in the midst of the campus' vast unoccupied open space well removed from the property line.

Since the District Licenses and Inspections Department has been informed that no construction is contemplated before fall, there is ample time for the commission to obtain such a presentation.

Yours sincerely,

JAMES G. DEANE,
Chairman, Subcommittee on Conservation and Park Protection.

HEATING AND AIR-CONDITIONING PLANT LOCATION

Mr. DEANE. We—and I speak of these many groups—

Senator HILL. Which you represent here this morning.

Mr. DEANE. That I am speaking for in an unofficial way, are very deeply concerned about a plan of Georgetown University to build a large heating and air-conditioning plant at the extreme edge of the campus, abutting Glover-Archbold Park, which I am sure you know is one of the most beautiful and valuable parks in Washington, and we regard the remark as especially important, because a very large part of it was donated to the people of the United States, as you know.

Senator HILL. That is right.

PROTECTION OF GLOVER-ARCHBOLD PARK FROM ENCROACHMENTS

Mr. DEANE. And this represents extraordinary generosity. There has been an effort for many years to protect the park from adverse encroachments.

I would like to show you very briefly a map indicating where the park is. As you can see, the Potomac River is down at the bottom of the map. The green stretching up to the vicinity of American University is the Glover-Archbold Park. It is a very narrow and beautiful stream valley.

Everywhere there is a red dot here, there has been some kind of damage to the park for the peripheral construction of large apartment buildings or other projects, and this has been very serious.

CAMPUS EDGE REZONING

Now, down on the bottom, that red streak is along the edge of the Georgetown campus that abuts the park, and I have put one dot there to indicate the approximate location of where the heating plant will be if it is built there, and we have indicated in red there the edge of the campus, because we feel that this, if this plant were put there, it would amount to rezoning the edge of the campus, which is now residentially zoned to an industrial type use, and that would have serious implications not only for the park but also for zoning here in Washington.

LOCAL COMMUNITY APPROVAL

Senator HILL. How far have they gone in getting the consent of local communities to put the plant there?

Mr. DEANE. They have had no approval from local agencies that have been officially granted. But we have not found the local procedures giving the appearance of a sufficient guarantee that the importance of this problem will be recognized. We are fearful that the Board of Zoning Adjustments, which has not yet issued an order on

this subject, may approve the project, because of what we regard as inadequate hearings.

Now, of course, we could, if necessary, take the matter to court, and this is a possibility. It is being given serious consideration, if this kind of order should emanate. There are other agencies involved. The Commission of Fine Arts has had the matter under active consideration, and has been concerned. The Building Permit Section of the District has not, of course, issued a building permit. It has not examined the plans. The Park Service has not granted a permit for sewers that would have to be built in the park, according to the university. I am hopeful that the Park Service will not grant this permit.

But we are concerned, and we are concerned in substantial degree, because we feel that inasmuch as the Federal Government, through a number of grants to the university, that are being prorated to the powerplant, to the heating plant, is a partner, so to speak, with the university in this project, and a coowner, in a sense——

Senator HILL. What would you like to have? A prohibition that no Federal funds could be used for this purpose?

Mr. DEANE. Well, I would not want to presume to suggest to the committee what action.

Senator HILL. What I am thinking about is how we would reach it. We don't——

PROPOSED PUBLIC HEALTH SERVICE SITE REVIEW

Mr. DEANE. Well, it would seem that the Public Health Service should, with its environmental responsibilities, automatically be reviewing this, and that if it made such a review, it would decide itself that this was not an appropriate, proper site, and that with alternative site available, and there is a vast acreage available at the campus, a better site could be found.

We have found the Public Health Service not responsive to date on the question of carrying out this kind of review. In fact, I found that some of the officials administering the grants were not even aware until we approached them that this project was located next to the park, and that it had adverse implications for the park and for neighboring residential areas.

Senator HILL. Who did you talk to there?

Mr. DEANE. Well, we have talked to many officials over the past 5 months, and I have talked with Dr. Gallagher, I have talked with officials in the National Institutes of Health. We have communicated with Secretary Gardner, I have talked with an aide to Secretary Gardner. We have had many communications that the university within the last few days informed the Public Health Service that it had as local clearances—this was not correct, and we found it necessary to inform the Public Health Service of this fact, and as a result, within the last several days, the Public Health Service suspended action on the advertising of bids for the construction, until evidence is in hand, written evidence, that all of the approvals have been granted.

Nevertheless, and while that is encouraging, the Public Health Service has not yet taken a hard look at this site, and in my opinion, this is something that is urgently necessary.

INCORPORATION OF CHECKLIST IN REPORT

Now, I wanted to suggest that perhaps the committee could consider writing into its report on this appropriation bill an admonition to the Service that would have some relevance to this question, and perhaps would encourage the service to adopt an environmental checklist which Assistant Surgeon General Kahn told me would be a very good idea, and which could be applied and which would offer some assurance that this kind of what we consider ill-planned project would be corrected before it got to this stage, and we would hope that this would also encourage the Service to take an immediate look at this problem, and prevent an improper and unfortunate plan from going forward.

ORIGINAL SITE LOCATION

We think that there is time to make a change in this. The university, as a matter of fact, when the grants were approved a couple of years ago, was intending to build on a site in the central part of the campus. I have a map here which illustrates this fact. Here is where the plant was, about 500 or 600 feet in from the park, the park line being over here, and this map was submitted to the Public Health Service at that time. Doctor Gallagher expressed to me great surprise that the project had been moved over here. He was not aware of it. I am not certain he was responsible during that period. But it does seem that a reasonable request would be to ask the university to go back to a site like that, that is just surrounded by athletic fields, parking lots, and I don't think that with their plans for air-conditioned buildings, and so on, that the noise would be a serious problem to the university. It would be a very serious problem to the park, as would the height and size, the construction damage, and so on.

PROPOSED SITE LOCATION

Here is a picture of approximately where the plant would go, in red, as close to the park line, about 50 or 60 feet, as they can possibly put it, down a steep slope, means gouging into a beautiful little bit of beechwoods, and so on, and I show you a picture of one of the sketches. This is one of the drawings from the park side.

This plant would be at least 90 feet high, 162 feet long, 96 feet deep, with a long parking area, a high retaining wall, facing the park, and a service road for oil trucks and similar vehicles coming practically along the park fence. We think that this is most unfortunate from a standpoint of the park. The upper half of the building would be louvered steelwork, behind which there would be cooling towers and other machinery.

NOISE IMPLICATIONS

We have succeeded in persuading the Public Health Service to examine the noise implications. A study was made by Public Health Services installation in Cincinnati on the site, with very fine equipment, based on the specifications in the contracts for the equipment, the Cincinnati installation reported—and I have included this report

in the document—that the noise from this plant, proceeding across the property line into the park and to the houses 550 feet away, would exceed the levels that are permitted in the District of Columbia zoning regulations for manufacturing and industrial zones, not for residential areas. So it is extraordinary.

This report has not been given substantial consideration by the service, but we don't find that the service has paid any attention to it whatsoever.

AVAILABLE CAMPUS SITES

Now, I would like to point out, as I mentioned very briefly, that the university does have a large amount of space, some 80 acres that have no buildings on them at the present time. I have some snapshots here which I will be glad to pass over to you, which show a little bit about the spaciousness of the campus, and also here is a snapshot of the site, a portion of the site, showing the beautiful beech trees and other trees looking up toward the athletic field area.

CAMPUS EDGE DUMPING AND DAMAGE

I am sorry to say that in other portions of the campus edge, the university has been dumping for a number of years, and has done a great deal of unsightly damage, and we feel that this is serious, and not a very good omen with respect to the promise this university has made to beautify this particular location and screen the building, and so on, from the view of people in the park, and we, however, are asking the park service to try to prevail on the university to show more respect for this public property.

It has been astounding to me that the university has been as thoughtless, I feel, with regard to this public asset, which I feel is also an asset to the university itself. In a few years, the university should regard this little strip of green as a valuable environmental asset to the university. But, if of course, its value is seriously damaged in the meantime, it won't be there for anybody.

GLOVER-ARCHBOLD PARK

Senator HILL. How long has this been a public park?

Mr. DEANE. This park was created by the donations of Mrs. Archbold and the late Mr. Glover in the 1920's, and in the 1930's, it was added to by purchases authorized under the Capper-Crampton Act, and it has been identified by Secretary Udall as a place that should be kept tranquil and beautiful, and preserved, that it is a nationally significant possession for the communities and for the public, and we feel strongly that the Government should try to resolve this problem in the public interest.

RECONSIDERATION OF PROPOSED BUILDING SITE

I would hope that the committee might in some way indicate its feelings on this score. We would hope the committee would agree, and that perhaps either something could be written into the appropriations report, or perhaps the university could informally be prevailed on to

reconsider, the Public Health Service could be asked to take a look at its procedures. Perhaps also the matter should come before your legislative committee. We have had in mind getting in touch with you on this, in your capacity as chairman of that committee, and I am not familiar with the proper jurisdictions, but we do feel that it is something that Congress should have concern about, and I hope that you don't feel that it was inappropriate to bring it before you.

Senator HILL. Not at all. We want to thank you, sir, and I assure you the matter will certainly have our most sympathetic and careful consideration.

Mr. DEANE. Thank you very much, sir.

PRESERVATION OF PARKS AND SITES

Senator HILL. I think we have done too much to destroy some of our parks and other beautiful sites that lend much to the life of our people. We have not taken the precautions and the care that we should.

Mr. DEANE. I am delighted to hear you say that, sir.

Thank you.

Senator HILL. We want to thank you very much, sir. Very much.

DISTRICT OF COLUMBIA DEPARTMENT OF VOCATIONAL REHABILITATION

PREPARATION OF DISABLED FOR JOBS

STATEMENT OF BERNARD M. LEVY, CHAIRMAN, ADVISORY COMMITTEE TO THE DISTRICT OF COLUMBIA DEPARTMENT OF VOCATIONAL REHABILITATION

INTRODUCTION OF DIRECTOR

Senator HILL. Mr. Levy.

Mr. LEVY. Good afternoon, Senator. I would like to take this opportunity to introduce to you Mr. Steven Gambara, who is the new Director of the District of Columbia Department of Vocational Rehabilitation.

Senator HILL. Glad to have you with us.

CURTAILED SERVICES FOR LACK OF FUNDS

The District of Columbia Department of Vocational Rehabilitation urgently needs more funds in order to prepare disabled people for jobs. In fiscal year 1967 the Department had to curtail services early in the year because it did not have enough money to provide physical restoration, training, and other vocational rehabilitation services to all who needed them.

Throughout the National rehabilitation programs have been on the move, whereas in the District of Columbia the forward movement of the program has been arrested due to this lack of funds. The inability of the staff to provide services to disabled clients, coupled with the insecurity engendered by the lack of funds, has contributed to a loss of morale, resulting in over 43 resignations during the past year. Therefore, it is essential to have additional funds in 1968 in order to move ahead.

MATCHING FEDERAL FUNDS

The 1965 amendments to the Vocational Rehabilitation Act provided for a Federal share of 75 percent but the allotment to the District is not high enough to provide 75 percent matching of District of Columbia funds. In 1965 the District of Columbia used \$538,688 in State funds. It must continue to use \$538,688 in 1967 to match a Federal allotment of \$603,014 and in 1968 to match an allotment of \$690,542. This rate of matching (only 52.82 percent in 1967 and 56.18 percent in 1968) is far below the 75 percent contemplated in the 1965 amendments.

An additional allotment, such as that approved by this committee in years before the 1965 amendments, would make it possible to have sufficient Federal funds to match District of Columbia funds at 75 percent and thus carry out the intent of the act and make it possible for the District of Columbia Department of Vocational Rehabilitation to serve adequately the disabled people in the District who need vocational rehabilitation services to become employable.

ADDITIONAL 1968 ALLOTMENT REQUIREMENT

In 1968 the District of Columbia Department of Vocational Rehabilitation needs an additional allotment of \$2,600,000 to match in full the funds it will have available.

The Advisory Committee to the District of Columbia Department of Vocational Rehabilitation, of which I am chairman, has considered carefully what the vocational rehabilitation needs are in the District of Columbia and what can be done to meet them. We feel that these additional funds are essential and hope that your committee will give favorable consideration to the provision of an additional allotment for the District of Columbia for fiscal year 1968.

SUPPLEMENTAL APPROPRIATION FUNDS

Senator HILL. Let me ask you. We put a hundred thousand dollars, as you know, in the supplemental. Did that help much?

Mr. LEVY. Senator, it came—by the time it came through, it was in June of this year, and we used it all up. I can tell you that.

Senator HILL. All gone?

Mr. LEVY. All gone, Senator.

We sure needed it.

Of course, the purpose of this would be to enable us to have a full 12 months' use of the money.

Senator HILL. I understand. To carry on your program, your full program, through the whole fiscal year.

Mr. LEVY. I know you are quite aware of what the problem is, sir.

Senator HILL. Yes, I think I know. I talked to Miss Switzer about it, too.

Mr. LEVY. She has been very helpful.

Senator HILL. She is very much interested. She expressed to me her very great interest in it. Anything you would like to add, Mr. Gambara?

EXPRESSION OF GRATITUDE TO SUBCOMMITTEE

Mr. GAMBARA. Nothing except that the staff is grateful for the support given by the committee in the supplemental in 1967, Mr. Chairman.

Senator HILL. Well, we are glad to have you here, and glad to have this statement.

Mr. LEVY. I thank you very kindly.

Senator HILL. We have got some problems this year, as you know. Tough problems.

Mr. LEVY. I know. How well I know.

NATIONAL BUDGETARY PROBLEMS

Senator HILL. That war in Vietnam is costing a lot of money, as you understand.

Mr. LEVY. I understand that.

Senator HILL. You saw where the House first refused to raise the debt ceiling.

Mr. LEVY. Yes, sir.

Senator HILL. Now they took a second thought on it. We have got some pretty tough problems, but certainly we will view this more sympathetically.

Mr. LEVY. I appreciate that, Senator, and thank you very kindly.

Senator HILL. Thank you, sir.

I appreciate your all being here.

Mr. LEVY. Thank you very much.

Senator HILL. Now, Mr. Mountin.

He is not here?

SUBCOMMITTEE RECESS

We will meet Monday morning at 10 o'clock.

(Whereupon, at 12:45 p.m., Friday, June 23, 1967, the hearing was recessed, to reconvene at 10 a.m., Monday, June 26, 1967.)

DEPARTMENTS OF LABOR, AND HEALTH, EDUCATION, AND WELFARE, AND RELATED AGENCIES APPRO- PRIATIONS FOR FISCAL YEAR 1968

MONDAY, JUNE 26, 1967

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:05 a.m. in room 1224 New Senate Office Building, Hon. Lister Hill (chairman) presiding.

Present: Senators Hill and Cotton.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

NONDEPARTMENTAL WITNESSES

PUBLIC HEALTH SERVICE

STATEMENTS OF DR. LEWIS E. JANUARY, PRESIDENT, AMERICAN HEART ASSOCIATION, PAST PRESIDENT OF THE AMERICAN MEDICAL ASSOCIATION, AND PROFESSOR OF MEDICINE, STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, AND DR. RICHARD HURLEY, DIRECTOR OF MEDICAL EDUCATION, AMERICAN HEART ASSOCIATION

APPEALS

Senator HILL. The subcommittee will kindly come to order.

Dr. January, we are very happy to have you with us here this morning. The last time I saw you was in my home city of Montgomery, Ala., when you came down there to do me honor. Proud to have you here today.

Dr. JANUARY. Thank you, sir.

Senator HILL. Delighted to have you. Proceed now in your own way, please, sir.

Dr. JANUARY. First of all, I want to express the appreciation of the American Heart Association to you, sir, for the reaction of your committee to our testimony last year.

My appeal today, however, I think is more important, because I believe the need is greater, and I clearly understand that the funds are more limited.

We are here, frankly, however, to urge that more be done than so far has been suggested. We are urging your most liberal view toward certain portions of the Public Health Service request.

NATIONAL HEART INSTITUTE

We are happy that the House of Representatives saw fit to approve the budget requests of the Heart Institute, without reduction.

Senator HILL. They didn't cut it.

Dr. JANUARY. But we regret that it was not increased. We are reassured that the House reduction of the regional medical program allotment won't hamper their work, and that, if necessary, the cut will be restored, if it seems that the need arises.

NATIONAL CENTER FOR CHRONIC DISEASES

We are, however, very disappointed that the House did not approve an increase of \$438,000, which had been asked by the National Center for Chronic Diseases. These funds are funds which the National, or which the Heart Disease Control Branch had hoped to draw for expansion of programs which we consider quite vital. These we are assured would have included studies on the influence of an increase of physical activity, as a means of reducing the risk of arterial disease. This, as I am sure, you know, is a gray area in medicine, that needs some clarification.

Senator HILL. It does, indeed.

RHEUMATIC FEVER PROPHYLAXIS

Dr. JANUARY. There are studies that need to be done on the required length of time one should maintain a streptococcus prophylaxis against occurrence of rheumatic fever. No one is very happy with the current state of information which suggests that this should be carried on indefinitely, possibly for a lifetime. I don't think we know that this is necessary.

CIRCULATION

They had hoped to initiate studies on the instrumental approaches to a better understanding of circulatory insufficiencies and overloading, and this is an area that is in need of clarification. Even this would be a minimal expansion of a program that is urgent, we feel.

HEART DISEASE CONTROL PROGRAM

Also, I would like to mention to you three particular projects on which there has been planning and pilot work, which now are unfunded by the House recommendations. We believe they are worthy of additional appropriations now, because they will enable the heart disease control program to extend to communities throughout the Nation new knowledge for basic research.

ELECTROCARDIOGRAM AND HEART SOUND ANALYSIS

One of these deals with the computerized analysis of electrocardiograms and heart sounds. This requires the development of a center for automatically processing and analyzing electrocardiograms. If this proves feasible, the ultimate adoption, of course, would not only increase the accuracy of interpretation, but would free a physician's time to spend more of it in patient care.

HIGH BLOOD PRESSURE CONTROL

The second of these programs is aimed at the communitywide control of high blood pressure. Pilot studies have already been done which indicate that only about half of all people with high blood pressure have been seen by a physician. Therefore, this plan was to develop survey procedure for an entire community, and establish the more reliable diagnostic criteria. Secondly, a system of controlled therapy would be prescribed and implemented and, thirdly, a long-term follow-up would be carried out to determine the effectiveness of this approach.

It is planned that these procedures, when perfected, then could be conducted in other communities, where they would be of great benefit to people who are known to have high blood pressure, but through casefinding, to people who are not aware they have the disease.

High blood pressure is one of the major causes of heart disease, and there is proof now that positive control will lower mortality. It is of some interest, I think, to you, sir, that in the years that the NHI research budgets have been increasing, in about 15 years, the mortality from high blood pressure has dropped by nearly 50 percent.

Senator HILL. That is very gratifying, isn't it?

Dr. JANUARY. Indeed, it is.

CORONARY CARE UNIT EXTENSION

The third program which we think is important, and which will be affected by failure to grant the increased request of the heart disease control program, is the planning for the extension of coronary care units into the Nation's smaller hospitals.

Senator HILL. Yes.

Dr. JANUARY. Coronary care units have been installed in this country in about 300 hospitals. They have been literally lifesaving, and to many individuals who have had an acute heart attack. There are 7,000 hospitals in the United States, and a large majority of people in this country depend for hospitalization on institutions which have fewer than a hundred admissions a year for heart attacks. As a result, only a few of these small hospitals are presently prepared to monitor constantly the electrical activity of the heart after a heart attack, and thus provide lifesaving attention.

The funds in question here would be used to explore the ways of broadening the base for coronary care programs, and incidentally I have been in Washington this weekend attending the first national conference on coronary care units. This was attended by more than 550 nurses and physicians from throughout the country.

Senator HILL. It shows the interest in this.

Dr. JANUARY. It was sponsored by the American Heart Association, the American College of Cardiology, and the heart disease control program.

The final result was strong endorsement for the establishment of coronary care units in the Nation's hospitals, as soon as adequate training for nurses and physicians is available.

RESTORATION REQUEST

Thus we appeal to you most urgently to reexamine the possibility of reinstating this \$438,000 which was requested and to add new funds

for the additional research which I have mentioned. The net effect, we think, will greatly advance the ability of physicians to improve their service to patients, and of communities to grapple more effectively with cardiovascular disease.

Senator HILL. Did you appear before the House committee, Doctor?

Dr. JANUARY. Yes. The reinstatements and additions that we are requesting are for the advancement and application of new knowledge.

BASIC RESEARCH

Now I would like to turn to basic research.

Senator HILL. All right, sir.

Dr. JANUARY. The American Heart Association is unreservedly committed to the view that the key to the conquest of cardiovascular disease will be found in basic research. We favor following every scientifically reliable path which might lead to the control of heart disease. You and your committee know that because of lack of funds, the National Heart Institute last year turned down more than 90 research projects which its advisory council deemed worthy of support.

Senator HILL. That they had approved.

Dr. JANUARY. Our own coordinated research efforts in the American Heart Association were equally restricted. Despite the fact that the American Heart Association and its affiliates invested more in research last year than in any previous year, we had almost 200 projects approved by our research committee which we were not able to fund. And we know this year that it will be even more serious.

PRIVATE RESEARCH

Incidentally, the American Heart Association supplies 80 percent of the private funds for the support of research.

Senator HILL. Eighty percent?

Dr. JANUARY. Eighty percent. Also, our income has continued to increase from private donations, even though the Government has also increased its support of research. It seems to us that together, we make the American people even more aware of needs. Certainly, the increasing support of the Government in research has not been reflected by a cutback in our own income.

I stress these facts to you today to encourage you also to increase the House appropriation for the National Heart Institute. There is a special reason for this request. The additional funds would assure the further development of at least two research studies, which are underway, and which offer great promise.

MYOCARDIAL INFARCTION STUDY FACILITIES

One is the highly encouraging effort to develop a number of myocardial infarction study facilities, where the events that take place immediately following a heart attack can be examined in the most minute and scientific detail. Facilities for only four to six such studies will be possible by the 1968 budget request, and we feel that this effort should be expanded. It is our firm belief that the research developments made possible by more of these facilities could lead to eliminating many of the 25 percent of all of the deaths that occur within the first

48 hours after a heart attack, and thus we feel that increased appropriation is justified for this purpose, even in the face of defense needs. After all, it seems to us that we do need to plan for the welfare of people after the present defense emergency, hopefully, will be resolved.

BLOOD USE PROGRAM

The second basic research project is the blood use program, through which it is hoped to find ways to stretch the limited supply of blood available. Already, valuable benefits have been achieved from this initial work. It is predicted that shortly it will be possible through improved techniques to keep blood available on the shelves of blood banks for longer periods of time than has been possible in the past. Thus the availability of blood would be increased remarkably. After all, human blood is obtained from donors. It can't be manufactured, and we should not miss any step in our national effort which might assure more efficient use and a better supply.

RESPONSIBLE FUND EXPENDITURES

I am anxious that you and your colleagues and all Members of Congress be assured that physicians, medical scientists, dedicated to combating heart and blood vessel disease are equally committed to the most economic use of funds which the American public makes available through taxes and through private donations.

We feel a deep responsibility for our recommendations for spending these funds. Therefore, we are particularly cautious in recommending governmental projects to be certain that there is no needless duplication, and I do not believe that there is, to our knowledge, any duplication in these requests.

By the same token, we must make certain that duplications are not suspected when, in fact, they do not exist. For example, if the myocardial infarction study facilities about which I have already spoken to you were to be cut back because of the mistaken opinion that adequate control of heart attacks is already protected under the regional medical program—and we have heard this said—this would be a most unfortunate error.

Senator HILL. This would be a big mistake; wouldn't it?

Dr. JANUARY. The myocardial infarction study facilities are entirely in the area of research. Improved heart attack care will, of course, come from it, but primarily from demonstration and professional education for the purpose of showing physicians how to apply present-day knowledge.

The primary purpose, however, of this, of the regional medical program, is not to gather new knowledge. Therefore, we do not believe that these functions are in conflict, but if such a misunderstanding were to prevail, we think it would be most unfortunate.

Senator HILL. They are complementary; aren't they?

Dr. JANUARY. Indeed, they are. Our purpose in being here today is to provide from our experience all of the guidance we can to help assure maximum benefits for Americans threatened with the death of heart disease and blood vessel disease, and to provide the research support required to learn the cause through which hopefully would come prevention.

Dr. Hurley and I would be happy to answer any questions you may have. I assure you that the American Heart Association is gratified for the leadership you and your committees in the past have shown in sensing the needs and implementing the forward-looking legislation of the past few years.

We thank you for the courtesy of the opportunity to present our views to you this morning.

Senator HILL. Well, you have made a fine statement, Doctor, and we appreciate it very much.

Anything you would like to add, Dr. Hurley?

Dr. HURLEY. No, sir. Dr. January has covered it very thoroughly.

Senator HILL. You want to say "Amen" to what he said?

Dr. HURLEY. Amen.

Senator HILL. Doctor, we certainly appreciate your appearance for this very splendid statement. We appreciate it very much, and are delighted to know that you okay it a hundred percent, Dr. Hurley. Thank you both very much, sir.

Dr. JANUARY. Thank you, sir.

Senator HILL. Thank you very much. Thank you both.

(The prepared statement of Dr. January follows:)

I am Dr. Lewis E. January, Professor of Medicine at the University of Iowa and President of the American Heart Association. With me is Dr. Richard Hurley, Director of Medical Education of the American Heart Association.

I am no stranger to this committee or to its distinguished chairman, having appeared before you a little more than a year ago to ask your support for specific requests for the Public Health Service budget for the present fiscal year. My appeal today is even more important, for the need is greater and—I clearly understand—the resources more limited. I am here, frankly, to urge you to do more than you might in the normal course of events. I am urging your most liberal possible attitude toward certain portions of the Public Health Service budget request.

The American Heart Association is happy that the House of Representatives saw fit to approve the budget requests of the National Heart Institute without reduction. We are also reassured that the House reduction in the Regional Medical Programs allotment will not hamper this important project and that the cut will be restored if, as work progresses, it becomes apparent that more funds are essential.

We are disappointed, however, that the House did not approve an increase of \$438,000 in the research grant funds of the National Center for Chronic Disease Control. These are funds against which the Heart Disease Control Branch had hoped to draw for the expansion of programs which we in the heart field consider to be urgent. These will include:

1. Studies of the influence of an increase of physical activity as a means of reducing the risk of arterial disease.
2. Studies on the required length of time to maintain a streptococcus prophylaxis in relation to rheumatic fever.
3. Studies on stress-testing and other instrumental approaches to better understanding of circulatory insufficiencies.

Even this will be a minimal expansion of program for there is much that needs to be done for which this small increment in funds would not be adequate.

I would like to mention three particular projects on which there has been some planning and pilot work but which are otherwise unfunded in this very conservative budget. We believe these are worthy of additional appropriations now because they will enable the Heart Disease Control Branch to extend to communities throughout the nation new knowledge obtained from basic research.

One of these programs deals with the computerized analysis of electrocardiograms and heart sounds. This requires the development of a center for automatically processing and analyzing electrocardiograms and heart sounds to provide exact and reproducible interpretation of these data. If this proves feasible, the ultimate adoption will free the physician's time so that he can devote more attention to the care and treatment of his patients.

The second of these programs is aimed at the community wide control of hypertension, or high blood pressure. Pilot studies indicate that only about one half of all people with high blood pressure have been seen by a physician. First, therefore, a system must be developed to survey an entire community and establish reliable diagnostic criteria. Secondly, a system of controlled therapy must be prescribed and implemented. Thirdly, long-term follow-up must be carried on to determine the effectiveness of the diagnosis and therapy. It is planned that these procedures, when perfected, can be conducted in other communities where they will benefit not only people who are known to have high blood pressure, but through case finding will bring under care those individuals who are not aware they have this disorder. Hypertension is one of the major causes of heart disease and stroke. Heart disease and stroke together account for about 77% of all heart and blood vessel deaths each year. The funds requested are essentially to perfect these procedures and to make a cost-benefit analysis in a demonstration area.

We cannot afford to delay an activity that affects so seriously the welfare of our countrymen.

The third forward-looking program that will be affected by the failure to grant the requested increase to the Heart Disease Control Branch is the planned extension of coronary care units into the nation's smaller communities. Coronary care units have been installed in nearly 300 hospitals in the nation's larger cities, and they have been literally lifesaving to many individuals who have suffered an acute heart attack.

The large majority of people in this country depend for hospitalization on institutions which have fewer than 100 admissions a year for heart attack. As a result, only a few of these smaller hospitals are prepared to monitor constantly the electrical activity of the heart after a heart attack and thus provide life-saving attention in those fateful minutes of forewarning that precede the disastrous crisis that occurs all too often. The funds in question here would be used to explore ways of broadening the base of coronary care programs.

I appeal to you most urgently to examine with great care the possibility of reinstating the \$438,000 of increase in grant monies requested by the National Center for Chronic Disease Control and to add new funds for application to research in the aforementioned most promising areas. Their net effect will greatly advance the ability of physicians to improve their services to patients, and of communities to grapple more effectively with the cardiovascular diseases.

The reinstatements and additions I am requesting are for the advancement and application of knowledge already developed. I want to turn my attention now to basic research that still must be done.

The American Heart Association continues to be firmly convinced that the key to the conquest of the cardiovascular diseases will be found in basic research. Because the heart and blood vessel diseases continue to be the Nation's Number One health enemy, taking close to a million lives each year, we favor following every scientifically reasonable path that might lead to a heart-saving discovery. As you know, because of lack of funds, the NHI last year was forced to turn down more than ninety research projects that its Advisory Council deemed worthy of development. Our own coordinated research efforts were equally restricted. Despite the fact that the American Heart Association and its affiliates invested more millions of dollars in research last year than in any previous year, almost 200 projects approved by our research committees were unfunded for lack of \$1½ million.

In our coming fiscal year we expect to be even more seriously limited.

I am stressing these facts to you today to encourage you also to increase the House appropriations for the National Heart Institute by at least a small amount. There is a special reason for this request. The additional funds would assure the further development of at least two research studies, all well under way, which offer great promise of success.

One highly encouraging effort is the development of a number of Myocardial Infarction Study Facilities, where the events taking place immediately following a heart attack can be examined in minute detail. Facilities for only four to six such studies will be made possible by the 1968 budget request. I feel that this effort should be expanded. It is our firm belief that the research developments made possible by more of these facilities could lead to eliminating 25% of all the deaths that occur within the first 48 hours after the onset of a heart attack. Thus, I feel that an increased appropriation is justified for this purpose even in the face of any fiscal urgency.

The second basic research project is the important Blood-Use Program through which it is hoped we will find ways to "stretch" the nation's limited supply of

human blood so as to help a larger number of patients over a greater length of time. Already valuable benefits have been achieved from the initial work under this program. It is predicted that it will soon be possible, through improved techniques, to keep blood available on the shelves of blood banks around the country for longer periods than has been possible in the past. Thus, availability of blood at any given moment will be markedly increased. It is most important to step up this research in the coming year. After all, human blood must be obtained from donors because it cannot be manufactured and no step should be missed in our national effort to assure the most efficient use of all the blood we can get.

Before concluding, I am anxious to reassure you gentlemen, as well as all of your colleagues in the 90th Congress, that the physicians and medical scientists dedicated to combating the heart and blood vessel diseases are equally dedicated to the most economic use of the funds the American public makes available to us through voluntary contributions and through taxes. We feel a deep responsibility for our recommendations for spending these funds which are so important to the advancement of research. Therefore, we are particularly cautious in recommending governmental projects to be certain that there is no needless duplication. Let me say to you that, to the best of our knowledge, such duplication does not now exist.

By the same token, we must make certain that duplications are not *suspected* where they, in fact, do not exist. For example, if the Myocardial Infarction Study Facilities, about which I have already spoken, were to be cut back because of the mistaken opinion that adequate control of heart attack is already available under the Regional Medical Program—and I have heard this said this would be a most unfortunate error. The Myocardial Infarction Study Facilities are entirely in the area of research. Improved heart attack care, which will be available to patients under the Regional Medical Program is primarily for demonstration and professional education—for the purpose of * * * knowledge for the benefit of their patients.

These functions are not in conflict. In fact they are complementary. However, if such misunderstandings were to prevail in Congress, highly valuable research could be interrupted, delayed or perhaps even abandoned at great and thoroughly unjustifiable cost to the American people. We want to do all in our power to prevent such an unfortunate possibility. At the same time, we want to provide, from our long experience, all of the guidance we can to help assure maximum benefits for Americans threatened with death by the heart and blood vessel diseases.

Dr. Hurley and I will be happy to try to answer any questions you may have. Thank you, gentlemen.

NATIONAL INSTITUTE OF DENTAL RESEARCH AND DIVISION OF DENTAL HEALTH

STATEMENTS OF DR. LELAND C. HENDERSHOT, EDITOR, AND HAL M. CHRISTENSEN, DIRECTOR OF THE WASHINGTON OFFICE, AMERICAN DENTAL ASSOCIATION

EXPRESSIONS OF APPRECIATION TO CHAIRMAN AND SUBCOMMITTEE

Senator HILL. Now Dr. Leland Hendershot, and Mr. Hal Christensen.

All right, Doctor. Glad to have you and Mr. Christensen here, and you may proceed now in your own way, sir.

Dr. HENDERSHOT. Thank you, Mr. Chairman.

My name is Leland C. Hendershot. I am the editor of the American Dental Association. With me, as you have pointed out, sir, is Mr. Hal Christensen, director of the association's Washington office.

We are here to present the views of the American Dental Association and the American Association of Dental Schools on appropriations contained in H.R. 10196 for the National Institute of Dental Research and the Division of Dental Health. A full statement is, with your permission, being submitted for the record and, additionally, I will read only selected parts of the oral statement.

Senator HILL. All right. We will have this appear in full in the record, Doctor.

Dr. HENDERSHOT. Thank you.

Senator HILL. All right, sir.

Dr. HENDERSHOT. We are indeed very grateful for this opportunity to testify before you. The dental profession has benefited greatly, and I would say almost immeasurably, from the counsel and support of this committee, especially its dedicated and distinguished chairman, who has accomplished so much for the health of our Nation.

Senator HILL. Thank you, sir. Thank you.

BUDGET REQUEST

Dr. HENDERSHOT. Now, as you know, sir, H.R. 10196 includes \$30.3 million for the National Institute of Dental Research and \$9.8 million for the Division of Dental Health. This will permit both agencies to continue their activities on about the same scale that obtained in the last fiscal year.

Senator HILL. There will be no real increase in activities, will there?

Dr. HENDERSHOT. No, sir.

Now, if we might talk about the National Institute of Dental Research, of the funds available to the National Institute of Dental Research, nearly half are allocated to extramural research grants. The budget proposes that \$12.9 million be allocated to this activity in fiscal year 1968 as opposed to \$12.1 million in the present fiscal year. This is an increase of 7 percent and will, the administration estimates, permit the funding of 311 projects next year as opposed to 303 this year. So there is a slight increase.

Set against this is our understanding, based on informal surveys, that more than \$1 million in grant applications have been approved but will be unfunded this year due to budget limitations. This more than absorbs the increase contemplated in the 1968 budget.

APPEALS

We hope this committee will permit the Institute to continue this aspect of its work at the present level and, in addition, have an opportunity for at least some measure of expansion to take advantage of new ideas and new areas of exploration. To do this minimally would require a budget of \$15 million which breaks down into three components; \$12 million representing present rate of progress, \$1.5 million to fund the existing backlog of approved grants, and \$1.5 million for a small-scale expansion.

DENTAL RESEARCH INSTITUTES

We have spoken already of the debt dentistry owes this committee for its wise and generous foresight. Dental research institutes are the most recent example of this. Last year this committee initiated a \$3 million budget item for the Dental Research Institute to permit establishment of a number of large-scale multidisciplinary centers.

Five institutes have been approved and funded already. These are located at the University of Pennsylvania, the University of Washington, the University of Alabama, the University of Michigan, and

the University of North Carolina. Now that the center concept has at length been established, under this committee's leadership, all those involved are hopeful that orderly growth will be possible.

The fiscal year 1968 budget allows for no increase in the amount allocated for this program. An additional \$1 million would, in our opinion, make it possible to register some progress both in the growth of the established centers and in the development of one or two additional ones.

Senator HILL. You couldn't handle the initial ones unless you increase this amount of money as appropriated by the House, isn't that right?

Dr. HENDERSHOT. That is right, sir.

If we are to meet the Nation's growing demand for dental care, we recognize that greater numbers of dentists will be needed. The dental educational system is already expanding to meet this need. However, if we are to retain, much less improve, the present quality of dental education, greater numbers of dental researchers and dental educators must be trained to educate this greater number of dental students.

FELLOWSHIPS AND TRAINING

The fellowship and training portions of the Institute's budget for this year is \$7.1 million. The proposed 1968 budget contemplates an increase of \$350,000, or 5 percent. Measured against the demand being generated by our population, and supported by governmental action on all levels, this is a rather small increase. Our associations suggest that an additional \$600,000 would permit an expansion more in line with the impending realities.

COLLABORATIVE STUDIES

Within its direct operations budget, the Institute has funds for what are called collaborative studies. One of the programs now supported under this arrangement relates to the development of better dental filling material, notably one that would adhere inseparably and chemically to the surface of the tooth. The potential consequences for patient care are considerable since development of such a material would make it virtually unnecessary ever to have fillings replaced, thus saving expense on the part of the patients and conserving much of the dentist's time.

Other programs being pursued through this mechanism include work on cleft lip and cleft palate, microbiological control of tooth decay, and improvement in oral-facial prostheses worn by people disfigured by injuries or disease, especially cancer.

We believe that \$500,000 beyond the total suggested in the fiscal 1968 budget could be readily used in this area.

DIVISION OF DENTAL HEALTH

This division administers a number of broadly based programs directed toward alleviating current dental problems. We believe that its budget of less than \$10 million is not adequate.

HEALTH PROFESSIONS EDUCATIONAL ASSISTANCE ACT

The Health Professions Educational Assistance Act and its subsequent amendments have enabled us to begin to redress the impending health manpower shortage. Administration of the act is shared by the Division of Dental Health.

As of January 1967, funds already allocated have or will result in the creation of two dental schools. Twenty schools will have been renovated or rehabilitated and 541 first-year places will have been added in the Nation's dental schools. We understand that more than 50 applications from all health schools will be approved and ready for funding by the end of the current fiscal year.

Under these circumstances, we would support fully the \$175 million that is requested in the budget before you.

This amount, of course, is the total available for all eligible schools. In previous years, a fixed portion of the authorized construction money has been allocated for dental education institutions. This procedure in our opinion has worked well and, so far as we know, it is unanimously agreed to be equitable. We urge that this procedure be followed during fiscal year 1968.

Senator HILL. You recall, sir, last year this committee added a proviso to the act for the construction of health educational facilities. That provided \$27 million for the construction of dental schools. The budget estimate for fiscal year 1968 does not contemplate the continuance of this proviso. Isn't that correct?

Dr. HENDERSHOT. This is my understanding, sir.

Senator HILL. Is that right?

Mr. CHRISTENSEN. That is right.

Senator HILL. What do you think about this?

Mr. CHRISTENSEN. We would ask that the committee continue the specification in the bill and would strongly urge that it be continued in the same proportion—20 percent—that has obtained since the bill was first enacted.

Senator HILL. First enacted. Yes.

Dr. HENDERSHOT. A particularly vital aspect of the Health Professions Educational Assistance Act is that section providing basic and special improvement grants for the eligible schools. We support the total amount requested for these programs and, as Mr. Christensen has pointed out, we support the total amount requested for these programs.

DENTAL AUXILIARY UTILIZATION

As has been noted, this Nation is beginning to focus its attention more sharply than ever before on the problems of dental disease. The dental profession welcomes this development and, indeed, has been working toward it for many years.

Recent public statements of President Johnson, HEW Secretary John W. Gardner, HEW Under Secretary Wilbur Cohen, and HEW Assistant Secretary Philip Lee have contained references to what needs to be done in dental care and what mechanisms should be adopted to do it.

The American Dental Association and the American Association of Dental Schools are gratified that the President, and so many of his advisers appear to share our desire to extend the finest possible dental care to all our fellow citizens.

To accomplish this objective, we agree that the Nation's dentists should take every possible step to increase their productivity. One of the swiftest and most certain ways of doing this is to make greater use of the dental auxiliaries, especially the dental assistant, who works at the dentist's side as he cares for patients.

Administration officials have publicly spoken of their belief in this procedure. Indeed, on more than one occasion, they have singled out the dental profession's utilization of auxiliaries as an example for the other health professions to follow.

It is extremely difficult, then, for our organizations to understand why this aspect of the Division's budget—the only source within the Federal Government supporting dental auxiliary utilization programs in the dental schools—is so consistently and repeatedly underfunded.

1967 APPROPRIATION

In fiscal year 1967 this budget item was allocated \$2.6 million. Under these circumstances, all of the senior students in the dental schools received some experience in working with auxiliaries and about half of the junior students were included. There is total agreement among educators that the senior students do not receive enough experience under the current program and further, that all of the junior students, not just half, should be included.

BUDGET REQUEST

The suggested allocation for fiscal year 1968 is \$3 million, an increase of \$400,000. This would be inadequate even were dental schools enrollment to become static. In fact, of course, dental school enrollment is increasing and will increase even more sharply in the near future as the full impact of the Health Professions Educational Assistance Act is felt. We believe sincerely that an appropriation of \$5 million would be far more realistic.

DENTAL ACTIVITIES PRESENTATION REGRETS

Before concluding our oral statement, Mr. Chairman, I would like to make one general observation regarding the new budget procedure which results apparently from the recent reorganization of the Public Health Service. We believe it is regrettable that in its budget presentation this year, the administration devoted considerably less attention to dental activities than in years past. We believe that continued budget and program visibility for the Division of Dental Health would be beneficial to Congress, to organizations such as ours, and to the general public.

Senator HILL. I think you are right about that, sir.

Dr. HENDERSHOT. Thank you.

And, Mr. Chairman, may we thank you once more for this opportunity to appear before you, and we would be glad now to answer any questions.

Senator HILL. We are happy to have you here.

Anything you would like to add, Mr. Hal?

Mr. CHRISTENSEN. No, Mr. Chairman. I think Dr. Hendershot has covered it.

Senator HILL. He has, indeed, covered it well.

Thank you very much. We both want to thank you very much. You have covered it splendidly.

(The prepared statement of Dr. Hendershot follows:)

Mr. Chairman and members of the committee, my name is Dr. Leland C. Hendershot. I am the Editor of the American Dental Association. With me is Mr. Hal M. Christensen, director of the Association's Washington Office. We are here to present the views of the American Dental Association and the American Association of Dental Schools on appropriations contained in H.R. 10196 for the National Institute of Dental Research and the Division of Dental Health.

We are grateful for this opportunity to do so as this Committee has long been a wise and generous friend. The dental professional has benefited greatly from the counsel and support of this entire Committee and especially its dedicated and distinguished Chairman who has accomplished so much for the health of the nation.

H.R. 10196 includes \$30.3 million for the National Institutes of Dental Research and \$9.8 million for the Division of Dental Health. There are additional small sums in other budgets that relate to the work of the Division and upon which we will comment in the course of this testimony.

The funds allocated will permit both agencies to continue their activities on the same, somewhat restricted scale as has obtained in previous years. The increases allowed over the present year's allocation are not such as to permit expansion of their work in any meaningful sense.

For some years, the American Dental Association and the American Association of Dental Schools have been urging the viewpoint that both agencies are consistently supported at a level just short of that needed to fulfill totally their mission. This belief stems in part, no doubt, from our own involvement in dental matters. It has, however, an objective basis as well.

As we all recognize, dental disease is perhaps the most pervasive ailment in society; almost no one is immune from its effects. This basic fact has a two-fold consequence. First of all, the widespread nature of dental disease dilutes its dramatic impact on the public consciousness and the result is that dentistry has unique difficulties in attracting private support for its research and public health activities. However, this same fact also means that any breakthrough in understanding the causes of dental disease or in perfecting techniques for preventing or controlling its manifestations brings benefits not to a segment of the population but to virtually everyone. Since the private sector spending for dental care activities now exceeds \$3 billion annually, the savings that could result from research breakthroughs in prevention of dental disease or expanded public health activities in controlling it would not be insignificant.

The extent to which dental disease is a national problem was, for many years, underestimated by everyone except dentists themselves. This has begun to change rapidly and emphatically and greater attention is now being paid by both the private and the public sectors of society.

In the private sector, there has been an immense growth in dental prepayment plans initiated by the profession itself and by the commercial insurance industry. Such plans, by encouraging early and regular dental care, will enable families to prevent much dental disease that now occurs and exists untended until it becomes so serious that it can't be ignored.

The public sector's new level of attention can be seen in the programs being enacted by Congress. The Office of Economic Opportunity's Project Head Start has a significant dental component. Most of the Title XIX programs now being enacted by the states include dental benefits and, by 1975, this will be mandatory. The President has submitted to this Congress a proposal to establish a series of dental care pilot projects for needy children based on the American Dental Association's National Dental Health Program for Children.

Such activities, both in the private and public sector, are supported by the dental profession. It must be recognized, however, that the scope and cost of these care programs will be determined in large measure by the activities being carried on in dental research laboratories, schools and public health agencies.

A program of dental care for needy children, for example, will have a very different form if we know how to prevent tooth decay than if we do not. But such a discovery will come only from those research activities supported by the budget of the National Institute of Dental Research.

A program of dental care, as a further example, will have a different form if the dentists involved have been trained, during their dental school years to work effectively with dental auxiliaries. By thus restricting his attention to those procedures requiring his level of proficiency, the dentist is able to care for more patients. But the training now given dental students in working with auxiliaries is supported by the Division of Dental Health. To the degree that such support is inadequate, young dentists leave school with a less than optimum understanding of the value of the auxiliaries and the ways in which to use them.

The more sympathetic attention that is paid, then, to the budgets of the National Institute of Dental Research and the Division of Dental Health, where are carried out the fundamental investigations that support and shape all other efforts, the greater hope we have of evolving care programs that are as efficient and economical as we could desire. Saving pennies on the budgets under scrutiny here today, it may be argued, can well result in wasting more than pennies elsewhere.

With this as prologue, then, we would like to discuss the two budgets in selective detail, addressing ourselves first to the activities of the National Institute of Dental Research.

NATIONAL INSTITUTE OF DENTAL RESEARCH

Research grants: Of the funds available to the National Institute of Dental Research, nearly half are allocated to extramural research grants. The value of this program is manifest. We have today a vastly increased number of dental research institutions capable of doing work of the highest quality on problems of basic importance to our search for the causes of tooth decay, gum disease, oral cancer and other oral ailments. Considerable momentum has developed in recent years in dental research and it is important that this momentum not be interrupted because of the unavailability of funds. If it is, we will suffer the loss both of projects of promise and of the qualified personnel who could staff these projects.

H.R. 10196 proposes that \$12.9 million be allocated to this activity in fiscal 1968 as opposed to \$12.1 in the present fiscal year. This is an increase of 7 per cent and will, it is estimated, permit the funding of 311 projects next year as opposed to 303 this year.

Set against this is our understanding, based on informal surveys we have undertaken, that more than \$1 million in grant applications have been approved but will be unfunded this year due to budget limitations. This more than absorbs the increase contemplated in the bill before you.

The net result is that the activity supported by extramural research grants will, at best, mark time during fiscal 1968. This, we believe, is shortsighted, particularly in view of the consideration, already mentioned, that must be given to the value of this work in making patient care more efficient and economical.

We would hope this Committee would permit the Institute to continue this aspect of its work at the present level and, in addition, have an opportunity for at least some measure of expansion to take advantage of new ideas and new areas of exploration. To do this minimally would require a budget of \$15 million which breaks down into three components: \$12 million representing present rate of progress, \$1.5 million to fund the existing backlog of approved grants and \$1.5 million for a small-scale expansion.

Dental research institutes: Last year this Committee supported a \$3 million budget item for the institute to permit establishment of a number of large-scale, multidisciplinary centers. Through their location in university environments, these institutes can bring to bear a variety of skills and approaches on those oral health problems not yet wholly understood. Five institutes have been approved and funded already.

This center concept has long been favored not only by the dental profession but by the scientific community at large. Now that it has at length been established, with this Committee's help, all those involved are hopeful that orderly growth will be possible.

H.R. 10196 allows for no increase in the amount allocated this year. That amount might, conceivably, be sufficient to sustain and develop those centers already established or to establish one or two new ones. Additional \$1 million would, in our opinion, make it possible to register some progress both in the growth of the established centers and in the development of one or two additional ones. We would suggest such an increase in the budget you are considering.

Manpower: The impact of the nation's increased attention to dental disease can be seen in all aspects of the Institute's activities. Nowhere is it clearer, however, than in those segments dealing with increasing the manpower pool.

If we are going to meet the growing demand for dental care, greater numbers of dentists will be needed. The dental education system is already expanding to meet this need. Existing schools are being enlarged and new schools are being founded.

Obviously, it is necessary that each graduating dentist leave school with the finest possible education. If we are to retain, much less improve, the present quality of dental education, however, greater numbers of dental researchers and dental educators must be trained to educate this greater number of dental students.

The fellowship and training portions of the Institute's budget for this year is \$7.1 million. H.R. 10196 contemplates an increase of \$350,000 or 5 per cent. Presently, about 600 persons are being trained under the Institute Fellowship and Training grants budget, with about 200 emerging annually into independent work. The proposed increase would allow an additional 33 persons to be trained and boost the annual number emerging to about 209. Measured against the demand being generated by our population, and supported by governmental action on all levels, this is a rather small increase. Our associations suggest that an additional \$600,000 would permit an expansion more in line with impending realities.

Collaborative studies: Within its direct operations budget, the Institute has funds for what are called collaborative studies. Investigations initiated in the Institute's own laboratories cannot always be carried to completion there because special facilities and/or personnel are required to pursue them. In such instances, outside facilities are used under contract arrangements to advance projects as an extension of the Institute's efforts. Generally, such collaborative work needs to be undertaken with a minimum of delay in order to preserve the beginning work already undertaken by the Institute itself.

One of the programs now supported under this arrangement relates to the development of better dental filling material, notably one that would adhere inseparably to the surface of the tooth. The potential consequences for patient care are considerable since development of such a material would make it virtually unnecessary ever to have fillings replaced, thus saving expense on the part of patients and conserving much of the dentist's time, freeing him to care for more patients. Work of this type is being pursued under contractual arrangement between the Institute and the National Bureau of Standards. The American Dental Association believes strongly that this productive program should be continued on an expanded basis.

Other programs being pursued through this collaborative studies mechanism include work on cleft lip and palate, microbiological control of tooth decay and improvement in oral-facial prostheses worn by people disfigured by injuries or disease, especially oral cancer. In this latter category, for example, it is estimated that some 21,000 persons undergo primary surgery of the head or neck each year and are, afterwards, in need of oral-facial prostheses of some type.

We believe that \$500,000 beyond the total suggested in the fiscal 1968 budget could be readily used in this area and hope it would be possible for the Committee to consider favorably such an increase.

Oral Cancer: The virulence and high death rate of oral cancer are such as to justify some special mention of it in this testimony. Cancer of the mouth accounts for approximately 4 per cent of all cancers occurring annually in the United States. More than 25,000 new cases occur annually and some 5,000 persons die each year from its ravages.

Despite this, relatively few cancer investigators are working in this area. There is a largely unfulfilled need for studies on the biochemistry and structure of malignant and premalignant tissue in the oral cavity. Such effort has potential not only for improving early diagnosis of oral cancer but also contributing important information in the search for common casual factors in all forms of cancer. An increase of \$100,000 would permit an expanded extramural research effort on oral cancer.

The Intramural Facilities of the Institute: Before turning to the Division of Dental Health, we should like to make a brief comment on the intramural facilities of the Institute. Dedicated in 1960, the building was filled to capacity almost at once. At present, the Institute is forced to rent space in other buildings in order to maintain its current program and is now beginning to examine the prospect of using space in PHS hospitals in other parts of the country. Such

physical separation militates against the total fulfillment of its mission. The appropriate officials should, in our opinion, begin now to plan an orderly, unified expansion of the Institute's physical facilities.

THE DIVISION OF DENTAL HEALTH

The Division administers a number of broadly based programs directed toward alleviating current dental problems. The Division helps to provide health education facilities. It studies and suggests solutions to the problems attendant upon dental health care of the indigent, the handicapped and those who live in remote areas. It conducts and supervises investigations leading to the increased efficiency of our current manpower pool. It supports investigations designed to make it easier for practitioners to stay abreast of developments in dentistry and incorporate them without unnecessary delay in their practice.

The Division is the sole Public Health Agency devoted to application of dental research results for the direct benefit of the public. With an operating budget of less than \$10 million, its efforts are obviously spread paper-thin.

Health Professions Educational Assistance Act: The Health Professions Educational Assistance Act and its subsequent amendments have enabled the nation to begin to redress the impending manpower shortage, to shorten dental schools and to broaden the opportunity for talented young people, who could not otherwise afford it, to undertake the study of dentistry. Administration of the Act is shared by the Division of Dental Health.

As of January, 1967, funds already allocated have or will result in the creation of two new dental schools. Twenty schools will have been renovated or rehabilitated and 541 first-year places will have been added in the nation's dental schools. We understand that more than 50 applications from all health schools will be approved and ready for funding by the end of the current fiscal year.

Under these circumstances, we would support fully the \$175 million that is allocated in H.R. 10196.

This amount, of course, is the total available for all eligible schools, including medicine, dentistry, osteopathy, optometry, podiatry and veterinary medicine.

In previous years, Congress has provided that a fixed percentage of the available construction money be allocated to dental educational institutions. The procedure seems to have worked well and, so far as we know, it is unanimously agreed to be equitable. We assume that this procedure will be followed during fiscal 1968 and, consequently, that dental schools will receive approximately \$37 million during fiscal 1968 for new construction, renovation and rehabilitation.

A particularly vital aspect of the Health Professions Educational Assistance Act is that section providing improvement grants for the eligible schools. The foresight of Congress in providing such funds has been widely and justly acknowledged.

These improvement grants fall into two categories. The basic improvement grants are proportionately distributed to all eligible schools that apply. The special improvement grants represent additional sums distributed to those schools who, it is determined, require special measures to assist them in bringing their program up to a desirable level.

The fiscal 1968 budget provides \$57.5 million for this twofold purpose. While this is a substantial increase over the \$30 million appropriated last year, we would agree that it is justified in that it more nearly approximates the demonstrated need of the schools as shown in the testimony that led to the enabling legislation.

Of this \$57.5 million total, it is our understanding that approximately \$32.5 million will be allocated to basic improvement grants, equaling about \$190,000 for each of the approximately 172 eligible schools. Of this amount, dentistry's proportionate share would be about \$9 million.

Special improvement grants will require, it is estimated, the remaining \$25 million. These grants will go only to those institutions whose applications have been approved by the National Advisory Council on Medical, Dental, Optometric, and Podiatric Education. The Administration says it expects that the major share of this \$25 million will go to medical schools. We assume this is said in recognition of the fact that there are 100 medical schools estimated to be eligible and only 52 dental schools, 10 schools of optometry, 5 schools of osteopathy and 5 schools of podiatry. We further assume, however, that the administrators of this section of the law will give to all other health schools the same sympathetic attention they extend to medical schools.

The final section of the Health Professions Educational Assistance Act provides scholarships and loans to students attending health schools.

The scholarship grants section provides approximately \$8 million for fiscal 1968, which amount, it is estimated, will provide support for some 4,000 young people of demonstrable talent who could not, even under the loan program, otherwise pursue a career in the health professions. We do not believe this relatively small amount of money could possibly be better invested than in this way. The need of excellence in the provision of health care, the competitive position of the health professions with regard to other scientific pursuits and the nation's moral commitment to our talented youngsters all compel unstinting support for this program.

Much the same can be said for the loan program. The educational preparation necessary for a doctorate in dentistry or medicine is long, arduous and highly expensive. Without the loan provisions of this law, many young people, splendidly equipped by intellect and aspiration would have to forego their hopes of becoming a physician or dentist. The funds available in fiscal 1968 will assist, it is estimated, some 21,000 health school students. We would urge this Committee to allocate the full amount requested.

The Allied Health Professions Personnel Training Act: Enacted in 1966, this law provides two types of assistance to those schools preparing students for such careers in the health field as medical technology and dental hygiene. It provides, first, some \$3 million in fiscal 1968 for construction or rehabilitation of physical facilities. Given the fact that there are nearly 650 institutions engaged in giving the kind of training encompassed by the bill, this is an extremely limited sum of money and will not, of course, move us forward in any substantial way. It is something of a beginning, however, and our organizations hope that the full amount requested will be allotted.

The educational improvement grants section of this law is likewise a severely limited response to the acknowledged need. H.R. 10196 allocates \$9.75 million. Distributed among the eligible institutions, it is estimated that each will receive about \$15,000. It should also be noted that the small amount of money, and the great number of institutions involved, will clearly make it impossible to award any special improvement grants, even though Congress has authorized them.

Dental Auxiliary Utilization: As has been already noted, this nation is beginning to focus its attention more sharply than ever before on the problems of dental disease. The dental profession welcomes this development and, indeed, has been working toward it for many years.

Though all segments of society seem to be manifesting increased concern, there is no question but that the present Administration has been in the forefront. Public statements of President Johnson, HEW Secretary John W. Gardner, HEW Under Secretary Wilbur J. Cohen and HEW Assistant Secretary Philip Lee have been directed toward what needs to be done in dental care and what mechanisms should be adopted to do it.

The American Dental Association and the American Association of Dental Schools are gratified that the President, and so many of his advisors, now share our desire to extend the finest possible dental care to all our fellow citizens. Further, we agree that many of the mechanisms they suggest are clearly valid.

In particular, we agree that the nation's dentists must take every possible step to increase their productivity. One of the swiftest and most certain ways of doing this, it has long been known, is to make greater use of the dental auxiliaries, especially the dental assistant, who works at the dentist's side as he cares for patients. The best way to teach a dentist how to work with dental assistants most effectively is, obviously, in the dental school, the place where he prepares himself for all other phases of his future practice.

Administration officials have publicly spoken of their belief in this procedure. Indeed, on more than one occasion, Administration officials have singled out the dental profession's utilization of auxiliaries as an example for the other health professions to follow.

It is extremely difficult, then, for our organization to understand why this aspect of the Division's budget—the only source within the federal government that funds dental auxiliary utilization programs in the dental schools—is so consistently and repeatedly underfunded.

In fiscal 1967, this budget item was allocated \$2.6 million. Under these circumstances, all of the senior students in the dental schools received some experience in working with auxiliaries and about half of the junior students were included. There is total agreement among educators that the senior students do not receive enough experience under the current program and, further, that all of the junior students, rather than half, should be included.

The suggested allocation for fiscal 1968 is \$3 million, an increase of \$400,000. This would be inadequate even were dental school enrollment to become static. In fact, of course, dental school enrollment is increasing and will increase even more sharply in the near future as the full impact of the Health Professions Educational Assistance Act is felt.

If we are to have any hope of keeping the promises we make to our fellow citizens, then the source programs that underlay all our efforts must be realistically funded. In this instance, an appropriation of \$5 million would permit the school to educate fully all the appropriate students in the value and use of dental auxiliaries. Accordingly, we urge this Committee to allocate \$5 million to this budget item.

Dental Health Center in San Francisco: For some time now, planning has been underway for construction of an addition to the present Dental Health Center in San Francisco. This Committee, in its report last year, urged that this go forward as quickly as possible. Our organizations are happy to note that the necessary construction funds are requested for fiscal 1968. The money is not part of the Division's budget but is contained in a separate Public Health Service fund for buildings and facilities. We are grateful to the Committee for its assistance in bringing this project to fruition.

Comprehensive Health Planning and Services: Fiscal 1965 marked the first year that federal funds were ever specifically granted to assist state and local governments to combat their immense dental public health problems. This specific earmarking was accomplished by the action of this Committee. By fiscal 1967, this dental category was funded at the level of \$1 million, which if apportioned equally would be a modest \$20,000 per state.

In the closing days of the 89th Congress, as you will recall, the categorical grant-in-aid program was replaced by a Comprehensive Health Planning and Services Act. The American Dental Association, in its testimony at that time, recognized that considerable justification exists for enacting a new framework within which states and the federal government could work cooperatively to solve their manifold public health problems. We voiced our concern, however, that the extremely small amount of money that had finally been earmarked for dental health might be lost yet again.

Our concern is somewhat intensified by the fact that in the fiscal 1968 budget this item has not only disappeared from the Division's programs but is no longer identifiably listed anywhere in the federal budget.

In testimony before a House Committee on Appropriations in April, Dr. Leonard D. Fenninger, director of the bureau of manpower, took note of the omission and explained: "Funds for this purpose in 1968 are included in the appropriation 'Comprehensive health planning and services' in the Office of the Surgeon General. We will continue, of course, to provide to the States necessary professional and technical guidance in connection with this program."

Dr. Fenninger's assurance is most welcome. We must say candidly, however, that his statement would have been even more welcome had he stipulated precisely how much money is going to be available in fiscal 1968. We would certainly hope it will not be less than \$1 million and would suggest that it could fruitfully be more.

Further we do not fully understand the rationale for including money allotted to such a specific item in a rather omnibus administrative fund. In future years, we believe, the Public Health Service might usefully provide more detailed comment regarding an item that, both nationally and on the state level, the dental profession considers to be of great importance.

Additional Programs: The Division carries out a greatly varied set of activities in addition to those specifically discussed in the course of this testimony. They are, for example, carrying out epidemiological studies concerning the incidence of cleft lip and palate. They have a fellowship and training program oriented toward prevention and control aspects of dental disease and community dentistry. They are deeply involved in studies concerning the nature and scope of the duties that dental auxiliaries can be asked to perform. They provide considerable support to the profession's efforts to intensify continuing education for the practitioner. They bear the chief governmental responsibility for educating the nation about the unquestionable benefits of fluoridation. They have a research and development program directed toward the clinical evaluation of new filling materials, the importance of which was explained in our discussion with respect to the National Institute of Dental Research.

All of these programs, as has been noted, are carried out under the most stringent budgetary limitations. The Division deserves, we believe, considerable com-

mendation for its efficient use of the money made available to it. Since the increases suggested in the fiscal 1968 budget for these programs are modest indeed, our organizations would urge the Committee, at a minimum, to appropriate fully the amounts requested.

COMPREHENSIVE HEALTH PLANNING AND SERVICES

Senator HILL. I shall place in the hearings a letter to the committee from the Governor of the State of West Virginia regarding the need for funds under the "Comprehensive Health Planning and Services," for the information and guidance of the committee and of the Senate. (The letter follows:)

STATE OF WEST VIRGINIA,
OFFICE OF THE GOVERNOR,
Charleston, June 15, 1967.

HON. LISTER HILL,
U.S. Senate,
Washington, D.C.

DEAR SENATOR HILL: One of the most critical needs of our State, and one of the areas in which we are devoting most attention in my administration, is the improvement of our environment, and of the general health of our people.

West Virginia—like so many other states—is placing increased emphasis on the eradication of illness and the environmental causes of illness.

New and enlarged programs in the area of health sciences are being developed to bring improved health services to the people of West Virginia.

We realize that the battle against disease is a never-ending one—but great strides are being taken toward solving these problems, and with Federal participation—through Public Law 89-749—even greater accomplishments can be realized.

The Comprehensive Health Planning and Public Health Act of 1966, which is one of several extremely vital federal programs in the area of the health sciences, provides funds for the development of these much needed services, and encourages the states to develop blueprints for better provision of these services.

I would like to point to the tremendous impact which will occur as a result of the shift from the categorical aid pattern of federal grants for public health services in favor of the block grant approach.

This new system will allow the states more flexibility in providing for the health needs of its citizens. In addition, the State Health Plan could be more effectively implemented under the block grant approach, for emphasis on health programs should be flexible enough to shift stress to a new and pressing problem, as it develops.

Therefore, I would like to strongly recommend that Section 314 D appropriation be restored to the \$62.5 million as originally requested and that funds that were eliminated for the purpose of recruiting and providing to the states upon request trained personnel to help in the development of comprehensive state planning be reconsidered. We feel this is an important provision that would facilitate West Virginia in translating plans into action.

Sincerely,

HULETT C. SMITH, *Governor.*

FUNDS FOR ENVIRONMENTAL HEALTH SCIENCES

Senator HILL. I have received a joint letter from the Senators from North Carolina, Mr. Ervin and Mr. Jordan, protesting against the House cut in the item for "Environmental health sciences" and asking that the cut be restored. The letter will be placed in the hearings for the guidance and information of the committee and the Senate.

(The letter follows:)

U.S. SENATE,
COMMITTEE ON THE JUDICIARY,
June 13, 1967.

HON. LISTER HILL,

*Chairman, Senate Subcommittee on Labor, Health, Education, and Welfare,
Related Agencies, U.S. Senate, Washington, D.C.*

DEAR LISTER: We were very disturbed to learn that the House of Representatives cut almost half of the appropriations increase requested by the Division of Environmental Health Sciences of the Department of Health, Education, and Welfare for fiscal 1968.

As you know, the work of the Environmental Health Sciences Division covers a broad spectrum of fundamental studies dealing with the modern environment and its effects on our health and well being. Because of our increased awareness of the dangers from air and water pollution, it has become clear that the Federal government has a definite responsibility to future generations of Americans to insure that they live in a healthy environment. Already, we have delayed far too long in dealing with these problems.

While recognizing the need for Federal fiscal responsibility, we feel that the \$7,069,000 increase asked for by the Division of Environmental Health Sciences is absolutely necessary if our Federal government is going to fulfill its responsibility to our nation with vigorous research on the many natural and man-made health hazards which threaten us. If properly financed, the research done by this division over the next decades will yield great dividends to future Americans. However, if the House cuts are allowed to stand, the less effective and, consequently, the more costly will be our future efforts in the area of environmental health.

We strongly feel that the Division of Environmental Health Sciences will be able to effectively utilize the \$20,615,000, which they requested for fiscal 1968, and we respectfully urge your Subcommittee to restore the House reduction of \$3,326,000 from their budget request.

With kindest regards, we are

Sincerely yours,

SAM J. ERVIN, JR.
B. EVERETT JORDAN.

GRANTS FOR CONSTRUCTION OF HEALTH RESEARCH FACILITIES

Senator HILL. I have the prepared statement of Mrs. Christine Stevens, president of the Animal Welfare Institute of New York City urging the allowance of the full budget estimate for grants for construction of health research facilities.

(The statement follows:)

STATEMENT OF CHRISTINE STEVENS, PRESIDENT, ANIMAL WELFARE INSTITUTE,
NEW YORK, N.Y.

In behalf of the Animal Welfare Institute, I urge that the full budget request for health research facilities construction be appropriated. These matching funds, which may be used to provide comfortable, spacious housing for research animals, are urgently needed in order to make possible the raising of standards in the many scientific institutions throughout the country where animals are overcrowded and housed so poorly that the institutions cannot even meet the minimum standards which will be required August 24th when P.L. 89-544, the Laboratory Animal Welfare Act, goes into effect.

Passage of this law has stimulated interest in improving animal quarters which, too long, have been the lowest priority item on the list in buildings for research, despite the fact that it is the animals upon which most of the research itself depends. This failure to recognize the vital importance of providing comfortable quarters and decent care for experimental animals has caused much needless suffering to animals whose sacrifice for human benefit should entitle them to humane consideration, and it has caused waste of funds to an extent which cannot be calculated because when animals sicken and die in a research project, causing confusion or even complete reversal of findings through causes unrelated to the research itself, the possibilities of error are compounded. At

best, data collected will be impossible to confirm in a second experiment; at worst, a finding which might be or lead to a cure for a disease may be lost forever. With so much at stake and considering the size of the appropriations for research, it is penny wise and pound foolish to refuse to provide housing and care for research animals which will maintain them in optimum condition of health and well being.

The provision of matching funds makes it possible for institutions to do the job that must be done in providing decent conditions for the millions of vertebrate animals used each year in programs funded by the National Institutes of Health and other government agencies. In providing these funds, we hope that this distinguished committee will bring to the attention of those who request matching grants for construction that the basic needs of animals do not include materials which are necessarily expensive, showy, or symbolical of status. What animals need in order to develop and live as normal, healthy individuals is: (1) sufficient space to move about and obtain reasonable exercise, (2) a comfortable place to sleep, (3) avoidance of isolation, which causes serious stress as amply demonstrated by repeated experimental evidence, (4) maintenance of sanitary standards which avoid the spread of disease, which is all too common in laboratory animal quarters, and (5) provision of ventilation, lighting, and control of extremes of temperature suitable for the species housed.

If wisely spent with sound animal husbandry as a guide, tremendous improvement can be brought about with relatively small expenditure. The numbers of institutions which need to make the improvements, however, means that the full budget request and more needs to be used for this purpose. The Animal Welfare Institute is prepared to assist in every way possible in encouraging good care and housing of research animals. I would submit for the record this film release of the United States Public Health Service which is distributing the Animal Welfare Institute film, "Laboratory Dogs," and I would also submit a copy of the Animal Welfare Institute manual, *Comfortable Quarters for Laboratory Animals* for the files of the committee. We believe that humanitarianism and science meet on practical ground where care and housing of research animals is concerned, and the funds which this committee can provide will play a most important role in bringing about better research and higher ethical standards in relation to the animals that have brought such great benefits to human health.

[Public Health Service Audiovisual Facility, film release]

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
PUBLIC HEALTH SERVICE; BUREAU OF DISEASE PREVENTION AND
ENVIRONMENTAL CONTROL, NATIONAL COMMUNICABLE DISEASE CENTER,
Atlanta, Ga.

Title.—Laboratory Dogs—M-1446-X, 16mm, black and white, sound, 17 minutes, 1966. Cleared for television.

Purpose.—To demonstrate a practical method of housing and caring for research dogs without the use of cages and to show the value of careful, individual attention to experimental dogs; to encourage provision of the best housing by administrators of research institutions.

Content.—The film contrasts the life of a caged research dog with that of a group of compatible dogs that have undergone different types of experimental surgery at the modern animal lab at the University of Ottawa Faculty of Medicine. Useful advice on animal care includes stress on the importance of a clean, large room for the dogs to live in, daily exercise on a long roof runway, and the availability of enough food and water. Postoperative care of a dog whose leg has been severed and replanted is shown; immediate postoperative care includes the administration of pain-relieving drugs and fluids throughout the night. Later treatment and special feeding emphasize the importance of humanitarianism in research and experimentation with dogs.

Audience.—Animal technicians, all schools of the health sciences, research foundations, hospital administrators and veterinarians.

Production.—Produced by Crawley Films, Ottawa, Canada, for the Animal Welfare Institute.

Availability.—Free short-term loan from: Public Health Service Audiovisual Facility, Atlanta, Georgia 30333, Attn: Distribution Unit.

Purchase from: Animal Welfare Institute, Post Office Box 3492, Grand Central Station, New York, New York 10017.

March 1967

ADDITIONAL FUNDS FOR CLINICAL RESEARCH CENTERS

Senator HILL. I have a letter from Senator Warren Magnuson, of Washington, in which he calls the attention of the subcommittee to the need for additional funds for general clinical research centers, for which the budget estimate was \$30,443,000, allowed by the House, while other witnesses had suggested about \$40 million. The Senator's letter will be placed in the hearings.

(The letter referred to follows:)

U.S. SENATE,
COMMITTEE ON COMMERCE,
Washington, D.C., July 6, 1967.

Hon. LISTER HILL,
Chairman, Senate Appropriations Subcommittee for the Departments of Labor and Health, Education, and Welfare, and Related Agencies, New Senate Office Building.

DEAR MR. CHAIRMAN: The President's budget for fiscal year 1968 includes \$30,443,000 for General Clinical Research Centers. The House of Representatives, in H.R. 10196 has left this request unchanged. After reviewing this area of research and services, I find that if the present allocation is sustained, the effective continuation of several of the projects now in operation is doubtful, and expansion in related areas will be virtually impossible.

The effects of the limited increase in appropriations for these centers would be drastic at this time. Fewer patients will be admitted, and basic research will be cut back. Fewer nurses and other staff will be hired, destroying the carefully controlled research environment which is the main strength of the centers.

The main reason for doubting the adequacy of the present allocation in keeping present programs in operation is because of two fixed costs: hospitalization, and salary increases for nurses, technicians, and other paramedical personnel. The House of Representatives realized this crisis to a degree, but I feel it did not fully take into account the over-all effect of this rise in costs as it influences the total program.

In my own State, at the University of Washington, the University Hospital Clinical Research Center operating budget has risen considerably. This is mainly because of salary increases: nurses salaries rose 12.7 percent on October 1; on February 1, dieticians and occupational therapists salaries rose 10 percent; social workers, diet aids and cooks salaries rose 7 percent; and secretaries salaries rose 5 percent. These increases have forced this one center to request an additional \$35,000 for their operations budget alone to maintain their present function. In addition, nurses expected to receive a 20 percent raise this summer.

The costs of hospitalization will continue to rise. These will be reflected in a proportional rise in the per diem costs and require additional support. In 1963, with a budget of \$33,500,000, fifty-four clinical research centers were operating with a 624 bed capacity. In 1967, ninety-one centers operated 1,129 beds. This increase in facilities has improved the efficiency and productivity of clinical science, but the point has been reached where further expansion is doubtful. With the steady rise in hospitalization costs, and salary increases of unpredictable magnitude and timing, the present budget requests will mean cutbacks, not expansion.

Several new centers were approved in 1966-67, but remain unfunded. Because of this, most expansion projects are far down the list of priority. The vital need for expanding such projects can be illustrated by two examples from my own State of Washington.

First, on July 1, Dr. Thomas Marchioro arrived at the University of Washington to head their kidney transplant program which cannot get underway until plans for the center expansion have been approved. Hence, the world's first opportunity to carry out research designed to discover how dialysis and transplantation can best be used together for the common goal of saving kidney patients will be seriously compromised.

Second, many clinical investigators and academic administrators have requested a conceptual extension of the center program for the study of certain patients who, because of the nature of their illness, must be housed in special areas of the hospital. Such areas include a locked psychiatric ward, a neonatal care facility, a rehabilitation unit or a hospital for the congenitally defective.

The highly trained personnel needed to staff these special units are available now in most cases (although they often are working in areas outside their main specialty now), but the facilities have not yet been developed to fill this need.

Another function of the centers which should be expanded involves post-graduate training. During fiscal year 1966, 3,028 interns, residents or post-doctoral fellows spent time in training at Clinical Research Centers. Although this figure represents a 100 percent increase over the previous three years, the shortage of well-trained clinical investigators and the growing gap between basic research and clinical investigation remain persistent problems. This can only get worse unless effective action is taken now.

Research productivity must also be allowed to continue. During fiscal year 1965, 975 papers and 446 abstracts were published as a result of work emanating from clinical research centers; during 1966, 1,220 papers and 560 abstracts were published in over 50 different journals and were disseminated in diverse fields for the benefit of many areas, not only in medicine, but in all sciences.

Research centers involve the best available academic talent in the clinical research area, and continue to be a potent stimulus to the rapid development of science. In this effort, the biological sciences and clinical investigation are drawn closer together. An example of the benefit gained through this relationship can be illustrated by the numbers of immunologists in this country once the technical ease of organ transplantation was demonstrated. Many other aspects of the health problems of today can also be cited.

The General Clinical Research Center program has made a beginning toward meeting a national need which is to provide the scientific environment for the study of disease. Expansion must be continued.

Therefore, I respectfully urge the Subcommittee for the Department of Labor and Health, Education, and Welfare, and Related Agencies, to carefully reconsider the House action with an eye to approving an increased appropriation of \$3,057,000. This increase would raise the 1958 budget for General Clinical Research Centers to \$33,500,000. This is the same as the total appropriation granted in 1963. This appropriation should support the orderly growth of this program which so effectively bridges the gap between the laboratory and the bedside.

Sincerely yours,

WARREN G. MAGNUSON,
U.S. Senator.

TUBERCULOSIS

STATEMENT OF DR. ROBERT L. YEAGER, NATIONAL TUBERCULOSIS ASSOCIATION IN SUPPORT OF THE TUBERCULOSIS AND CHRONIC RESPIRATORY DISEASE PROGRAMS, U.S. PUBLIC HEALTH SERVICE

PREPARED STATEMENT

Senator HILL. Dr. Yeager, National Tuberculosis Association. Will you come forward, Dr. Yeager?

Dr. YEAGER. Yes, sir.

Senator HILL. All right, Doctor, we are happy to have you, proceed sir.

Dr. YEAGER. Senator Hill, I thank you for this opportunity to appear before you, and I have a statement which I shall leave with the committee but I should like to emphasize certain aspects of it.

Senator HILL. All right, we will have your statement appear in full in the record, Doctor.

(The statement follows:)

THE TUBERCULOSIS PROBLEM

The National Tuberculosis Association was founded in 1904, when tuberculosis was the leading cause of death. Every community in the country is covered by

one of our affiliated associations and we have as an integral part of our national association a medical society of some 5,000 physicians called the American Thoracic Society.

In recent years, an average of 50,000 new active cases of tuberculosis have been reported annually. Each new case has an average of five contacts who must be examined for possible existence of infection and disease. At any one time, about 100,000 persons are in hospitals or are receiving active treatment at home. Another 200,000 are still being supervised by health departments to assure that they will not relapse; approximately 10,000 patients are known to reactivate annually.

These figures give some approximation of the current burden of tuberculosis control on health departments.

THE TASK FORCE ON TUBERCULOSIS

In the 1950's, following the development of very effective anti-tuberculosis drugs, it became increasingly evident that these drugs were not being employed widely enough to bring about the diminution in the disease possible through their proper and adequate use.

A Task Force was appointed in 1963 by the Surgeon General of the U.S. Public Health Service to develop a program to take full advantage of the currently available scientific advances.

Congress has accepted the recommendations of the Task Force to date by specific appropriations action. Practically all States have been able to intensify their tuberculosis control efforts.

Currently there are 88 tuberculosis projects funded in all but one State. In our opinion, the Tuberculosis Program of the United States Public Health Service has done an outstanding job in administering the expanded project grant program. An evaluative approach to tuberculosis control has been introduced. Priorities have been established and accomplishment in performance has been recorded.

WHAT REMAINS TO BE DONE

Nevertheless, tuberculosis control measures remain inadequate in many areas of the country. In one group of project areas, only half of the active cases who should have had an examination within the previous six months to see if they were still infectious had done so. Such poor performance in one of the most critical aspects of tuberculosis control shows the extent of improvement needed—improvement possible only if the additional resources recommended by the Surgeon General's Task Force are actually made available.

In order to ensure tuberculosis-free generations in the future, the Tuberculosis Program of the Public Health Service has been working on plans to encourage tuberculin testing of children entering school. It is important that this objective not be impeded. The President in his statement on America's Children and Youth of February 8 stated as one of his priorities the stopping of "tuberculosis in its first stages, before it causes serious harm."

FINANCING OF TUBERCULOSIS CONTROL

Project grant fund (in the amount of \$14,950,000 in fiscal year 1967) have been the main form of Federal support for tuberculosis control during the past few years. Formula grants in the amount of \$3,000,000 were available this year for ongoing control activities within State and local health departments.

As Federal funds were increased in response to recommendations of the Task Force, we were concerned that State and local expenditures might decline. However, evidence shows that this is not the case, the amount spent on tuberculosis control by State and local governments this year totalling at least \$37,000,000, an increase over the estimated expenditures of \$32,500,000 at the time of the Task Force report.

THE FUTURE

The National Tuberculosis Association Board of Directors supported the principles of P.L. 89-749 because the NTA has always supported strong basic health services. According to the House Committee report accompanying H.R. 18231, project grants are for purposes of program support, development and demonstration for such targets as tuberculosis control.

The Task Force recommended that Federal appropriations for the third year of accelerated tuberculosis control total \$25,000,000 for project grants and

\$4,500,000 for formula grants. This third year is fiscal 1968. The House has approved the amount of \$17,500,000 for project grants for tuberculosis control for 1968 as requested by the Administration.

This sum is \$7,500,000 short of the requirements for the Task Force plan. It will indeed be disappointing if the careful plans of the Task Force on Tuberculosis Control have to be scaled back in the critical next year when increased activities have just begun to have an impact on control performance. To delude ourselves that tuberculosis is no longer a formidable enemy is to permit more years of unnecessary suffering and expense from this disease.

We urge you to appropriate at least \$17,500,000, the amount requested in the budget for project grants for tuberculosis control.

STATEMENT ON EMPHYSEMA, BRONCHITIS, AND OTHER CHRONIC RESPIRATORY DISEASES

The Problem

The rate of increase in deaths from emphysema, chronic bronchitis and other chronic respiratory diseases has been so sharp in recent years as to attract widespread attention. In 1965, emphysema and chronic bronchitis caused close to 24,000 deaths and were estimated to have contributed to 50,000 other deaths. Thus 74,000 deaths in one year alone were caused directly or indirectly by these chronic chest diseases. In addition, many deaths due to such conditions are thought to be incorrectly attributed to "heart failure" and a host of other ill-defined conditions. Deaths from emphysema rose from 15,796 in 1964 to 18,664 in 1965. This increase of over 2800 deaths in one year is almost as great as the number of persons recorded as dying of the disease ten years ago.

In emphysema and chronic bronchitis, the most prevalent of the chronic respiratory diseases, both permanent and transient changes take place in the lungs which make it impossible for a person to obtain all the oxygen he needs and to eliminate the waste gases of breathing. As these conditions progress, the patient becomes increasingly short of breath, more and more unable to walk and do his work. He becomes a respiratory cripple fighting for every breath. The disease attacks primarily males in their most productive years of life.

It is estimated that at least 10 per cent of all men above the age of 40 have enough pulmonary obstruction to impair their capacity to breathe. Emphysema is now the second most frequent diagnosis for which benefits are granted by the Social Security Administration to workers who must retire for disability prior to age 65. Annual costs of these benefits are today in excess of \$90,000,000.

Dr. Rene Dubos, the Rockefeller University bacteriologist, recently stated that chronic pulmonary disease is the greatest single medical problem in Northern Europe and is increasing at an alarming rate in North America. During the week of October 17, 1966, the Public Health Service and the National Tuberculosis Association sponsored a Conference to consider what could be done to arrest the rise in chronic respiratory diseases in the United States.

The Task Force called together for this purpose consisted of leading medical specialists and other authorities in the fields of research, public health and medical and nursing education. Their findings are summarized in the following.

CAUSATION

The cause of emphysema and the course of both emphysema and chronic bronchitis are not fully understood and a better understanding of the diseases is necessary before diagnosis and treatment can be improved.

Cigarette smoking has been strongly implicated in their development but other factors are certainly involved because some non-smokers develop emphysema. The effects of environmental pollution on development of chronic respiratory diseases are not fully known.

To find answers to such questions as these, the Task Force pointed to the need for expansion and acceleration of basic, epidemiologic and clinical research in chronic bronchitis and pulmonary emphysema.

FINANCING FOR RESEARCH

It is obvious that if the diseases which cause pulmonary crippling are going to receive the kind of national attention called for by this Task Force, more funds must be forthcoming from the Federal government to finance research activity than are now available.

In fiscal 1967, the budget for the National Institute of Allergy and Infectious Diseases contained approximately \$1,000,000 for specific research in emphysema, and this appropriation has been available only during the past two years. These funds support investigations exploring the role of infectious agents in the development of chronic respiratory disease. The National Heart Institute also supports emphysema research. The amount of support in the latter Institute for work concerned with pulmonary physiology is estimated at several million dollars.

If we are correct, the 1968 budget for the National Institute of Allergy and Infectious Diseases, as approved by the House, includes little additional money for research in emphysema. Nor is there any specific increase in funds for such research noted in the program of the National Heart Institute although emphysema is cited as an increasingly serious disabler of our population.

In our opinion, the attention being given in the research community to the subject of emphysema and related chronic pulmonary conditions is inadequate. We believe that these minimal efforts are not due to disinterest on the part of researchers but to the fact there is no concerted attempt in the Federal establishment to provide additional funds in an identifiable program which will enable researchers to pursue studies in the field.

The National Tuberculosis Association urges this Committee to take action this year to see that greater impetus be given to research in chronic respiratory diseases through appropriation of increased Federal funds to the National Institutes of Health for this specific purpose.

MEDICAL AND OTHER PATIENT CARE SERVICES

Therapeutic help is available for patients with chronic respiratory disease which temporarily relieves their condition and enables them to function within the limits imposed by the severity of their condition.

Nebulized aerosols, breathing exercises and other physical reconditioning can be of benefit. Extremely effective inhalation therapy machines are available which assist patients in the act of breathing, but the employment of these devices under other than skilled medical management can be detrimental and even dangerous to the patient. At all times, the patient must be protected from contracting respiratory infections which will exacerbate his condition.

We have learned much in the past ten years which has been dramatically effective in preventing death in patients who go into respiratory failure. However, help of this nature is usually confined to those in life threatening crises in whom respiratory difficulty may be the end result of other conditions.

As with any disease, the physician must have exact knowledge and understanding of the patient's physical conditions to make a proper choice of a medical regimen. In the majority of communities, skilled medical supervision for patients chronically ill with pulmonary insufficiency is just not available.

This situation is due largely to the fact that the medical knowledge which does exist has not been made generally available because of lack of personnel to teach skills and knowledge necessary to diagnose and treat the disease. As might be expected, it is necessary to break such a bottleneck by starting where people are trained.

THE SOLUTION TO IMPROVED MEDICAL CARE

The Task Force discussed at length the need for physicians and other personnel well trained in the diagnosis and treatment of patients with emphysema and chronic bronchitis.

They stressed the present lack of capability for pulmonary disease teaching in medical schools. They stated that the need could only be met by organized programs in medical schools under faculty competent in these specialties.

Much of the knowledge and techniques in the respiratory disease field which we do possess have developed only in the past decade. Therefore, medical schools have had little time to develop educational programs to equip students with the kinds of skills needed.

The NTA has made a survey which shows that only one-fourth of the existing medical schools have a program in pulmonary disease teaching which could be described as more than minimally adequate.

Specifically, the survey revealed that twenty per cent of the 82 medical schools responding to our inquiry had no undergraduate chest disease teaching program. Over a third did not assign students to chest clinic patients. Over a third had no clinical or research fellows working in this important field of medicine. Ten

schools had no full time faculty member assigned to pulmonary disease teaching; 18 had only one.

The NTA believes that the urgent need for professional education in this field can be met only by the establishment in every medical school of a specialized cadre of full-time personnel working with patients who are afflicted with these conditions.

The primary purpose of such cadres would be to develop understanding in medical students, interns, residents and fellows in university medical centers of the physiologic, diagnostic, treatment and rehabilitation principles underlying the care of respiratory disease patients. Cadres would consist of physicians, pulmonary physiologists, nurse specialists in respiratory disease care, pulmonary function technicians, inhalation therapists and physiotherapists, and blood-gas chemists.

Through such programs, direct impetus would be provided for increasing the numbers of specialists and other personnel with highly specialized skills. By providing the opportunity for research training, intensive residencies and fellowships in the field could be offered and participation of post-graduate students would be possible.

Medical students who become general practitioners would go into their communities with greatly expanded knowledge of how to care for respiratory disease patients. Most important, continuing educational programs would almost immediately extend knowledge to practicing physicians and other health professionals, and to institutions in their areas.

Inevitably, new developments in techniques would be conceived in such programs which would be disseminated to medical practitioners in the community, the end result being availability of good medical services outside hospitals, an objective we must all work for in these times of accelerating hospital costs and a particularly important objective in the care of persons whose disability is long term.

This particular approach we consider the most effective way to meet an increasingly critical situation. It demands the various skills of several disciplines working together to show students and practitioners how to best manage patients with these diseases.

A full scale program of the type we are proposing would cost approximately \$7,500,000 a year if all of the approximately 100 medical schools in operation or planned for operation in the next five years participated immediately.

The estimate of \$7,500,000 includes maximum support in a third of all medical schools where the program must be initiated. In approximately a fourth of the schools, costs would be mainly for the provision of highly specialized equipment which would enable those schools to realize the potential of such programs through use of professional and technical resources already available. In the remaining medical schools, augmentation of skills and equipment of carrying degrees would be required depending on their respective staffs and facilities.

The funds requested by NTA for this program were not allowed by the House. We urge that your Committee provide the impetus to this program by appropriating funds to start it this year. We recommend that appropriations for 1968 be at the level of \$2,000,000; this amount will allow demonstrations of what can be accomplished.

In considering how this educational program should be implemented, we request consideration by the Committee of the mechanism currently set up in the Regional Medical Programs. The major interests of these latter programs are involved with chronic respiratory disorders due to the close relationship between the pulmonary and circulatory systems. Many patients with chronic respiratory diseases develop disfunctions of the heart, such as cor pulmonale, because of the stress imposed on that organ by physiologic deterioration of the respiratory tract. Conversely, certain types of heart disease can cause changes in the functioning of the lung.

The objectives of the Regional Medical Programs as described in the report of the House Appropriations Subcommittee on Labor-HEW seem to be tailored to the type of program we wish to initiate. Activities of the regional medical complexes are directed at speeding the transfer of the most advanced knowledge available in diagnosis and treatment to the medical practitioners in the community, by means of continuing educational courses, consultation and the demonstration of medical skills.

A program such as we have described, if incorporated into medical complexes, will go far to remedy deficiencies in care and to reduce the tremendous costs of these diseases as more knowledge of early diagnosis, effective treatment and rehabilitation is developed and utilized by doctors in their medical practice.

CHRONIC RESPIRATORY DISEASE PROGRAM, PHS

The Congress played a role in the establishment of the Program of the Public Health Service which has the responsibility for promoting control of chronic respiratory disease and has appropriated \$1,000,000 annually for that Program during the few years since its inception. The Chronic Respiratory Disease Program is the only Federal agency whose sole purpose is to promote better diagnosis, treatment and rehabilitation of chronic respiratory disease patients.

Its activities include developmental and evaluative research on the effectiveness of various diagnostic and therapeutic approaches; it has promoted high quality services for patients through demonstrations and educational programs.

Meager appropriations have limited the number and scope of these valuable projects.

The need for more and better services for patients with emphysema and other chronic respiratory conditions is great in every area of the country. Communities must develop more adequate medical care services for respiratory disease patients. For the Federal program to reach its potential in assisting communities in attaining these objectives, it must have additional funds.

It is time that more projects are undertaken by the Chronic Respiratory Disease Program aimed at developing new approaches and demonstrating workable methods of providing services. More educational programs for the medical profession and the public must be provided in order to promote wider application of the knowledge that is available.

We note in the report of the House hearings that the Administration requested \$500,000 less for operation of the Chronic Respiratory Disease Program than the low budget submitted by the Department of H.E.W. Thus, instead of receiving a much needed increase, the Program will be operating at the same level as last year, since the House did not allow additional funds as requested by the NTA.

In order that this situation be remedied, we request that the Senate increase the appropriation of the National Center for Chronic Disease Control by \$1,000,000 for the types of specific activities in chronic respiratory disease which are so desperately needed.

SUMMARY

In our opinion, attention to the control of chronic respiratory diseases, including tuberculosis, is markedly inadequate in the President's budget. Action of the House did not remedy the situation.

The National Tuberculosis Association calls on this Committee to take action to alleviate the serious problem of chronic respiratory disease. It requests that the Committee:

1. Appropriate at least the requested amount of \$17,500,000 for tuberculosis control project grants in order that the campaign to eradicate this major communicable disease can be maintained.
2. Make it possible to launch a campaign against the other chronic respiratory diseases, such as emphysema and bronchitis, whose rapidly increasing toll threatens to negate all that has been achieved in control of respiratory tuberculosis. In order to do this, the National Tuberculosis Association requests:

Increased funds for the National Institutes of Health for research grants in the field of chronic respiratory disease.

Support for initiating in medical schools and affiliated teaching hospitals, a demonstration program of professional education at an initial amount of \$2,000,000.

An additional \$1,000,000 to the National Center for Chronic Disease Control for the Program in Chronic Respiratory Disease.

CONTROL AND ERADICATION

Dr. YEAGER. Thank you.

I am Robert L. Yeager, physician, medical director, Summit Park Hospital, Pomona, N.Y.—the Rockland County Hospital for Pulmonary Diseases. I am a member of the board of directors of the National Tuberculosis Association and president of its medical branch, the American Thoracic Society, and I am speaking on behalf of these groups.

First, I would simply like to say how deeply we appreciate your sincere interest and support of the program of control and eradication of tuberculosis, Senator Hill. We have stated this formally to you before, and I should like to say it again now. It has enabled us to continue our gains toward the elimination of this disease, and if it had not been for you, these gains could never have been made.

APPEAL

The National Tuberculosis Association supported Public Law 89-749 with the understanding that the tuberculosis funds would continue as outlined and planned by the task force. The task force recommendations called for \$29,500,000 for the fiscal year 1968. Unfortunately, the overall ceiling on grants prevents this, and the House has granted a sum of \$17,500,000.

Now, we urge you, sir, to appropriate at least \$17,500,000, and we hope that more funds can be made available through the raising of the authorization ceiling, if it is at all possible.

RESPIRATORY DISEASES

Now an even more serious problem, however, is our attack on bronchitis, emphysema, and other similar respiratory diseases. These diseases are increasing rapidly in number. The cause is at this moment unknown, the natural course of the disease is unknown, due to the difficulty of early diagnosis.

It is estimated, for example, that 10 percent of the men above 40 show some symptoms of this disease, and a great deal higher, I might add, of those men over 40 who smoke more than a package of cigarettes daily.

In 1965 these diseases caused 25,000 known and reported deaths, and were mentioned as contributing causes in an additional 50,000.

Their annual cost in social security benefits alone today is \$90 million, a figure that is rapidly approaching absolutely unknown heights, because of the development of these diseases.

EMPHYSEMA

Senator HILL. We didn't hear about emphysema until more recent years; did we?

Dr. YEAGER. We did not, sir, you are correct, and there are a variety of reasons for that. One is that the term "emphysema" itself has to have several diagnostic meanings, according to the radiologists, first, according to clinicians, second, according to the pathologists, third, according to our English friends, even a fourth. We have recognized this as an entity only when we have developed our present methods of diagnostic study including functional tests to the point that one could make this diagnosis on living patients.

We are finding out so much more about it now than we have ever known before, but we still need funds for research. The committee last year appropriated \$1 million through the National Allergy Institute for emphysema, which we certainly deeply appreciate. Additional research efforts are being extended by the National Heart Institute as well, but we have still great difficulty in finding just how

much money is available, for what specific projects and problems, and what the limitations will be. And we know personally of many worthwhile projects that have not been able to be funded. We request increased funds for the National Institutes of Health, for research grants in the field of chronic respiratory diseases.

Senator HILL. How much total increase do you request?

Dr. YEAGER. We have not stated that, sir. We would leave that to your better judgment, but we certainly need additional funds, and we can document and have documented this need in our printed statement.

PERSONNEL TRAINING

Now, our largest problem in certain respects is a need for trained manpower. In a recent survey that the NTA made, only 25 percent of our medical schools were found to have a minimal satisfactory program of training.

Senator HILL. Only 25 percent?

Dr. YEAGER. Twenty-five percent of the schools that answered, which was 82 schools. Twenty percent of 82 schools have no formal undergraduate training in pulmonary diseases. Ten schools have no full-time faculty member assigned to this area. We need doctors, nurses, inhalation therapists, physiotherapists, and trained aides, because this is a team approach to the treatment of these diseases, and we need them badly. Therefore, we request for initiating in medical schools and affiliated teaching hospitals a demonstration program of professional education at an initial amount of \$2 million. We have documented this in our statement, showing exactly how this program might be started.

Now the support for program services is scattered in the Public Health Service, although it is mainly in the chronic respiratory disease program. There are many methods of treatment which have been developed during the past 10 years that are available at this moment but only in highly specialized centers. Most general hospitals, for example, do not have them readily available, certainly not as outpatient services. Such centers are required to have facilities for functional studies, laboratory facilities for rapidly and readily available analysis of blood gases, treatment facilities for outpatients, so as to prevent a more rapid progression of these diseases.

If you will pardon me for digressing for a moment, in our hospital we have such an outpatient development. We give treatment to these outpatients, 7 days a week, morning, noon, and night. For these purposes, it requires an extensive team of individuals, trained inhalation therapists and nurses, trained physiotherapists, exercises, breathing exercises, anything that can be done to aid in the rehabilitation and the continued care of these people who have these pulmonary diseases.

BUDGET REQUEST

We request an additional \$1 million to the National Center for Chronic Disease Control, for this program in chronic respiratory disease.

And, Senator Hill, I want to say again how much we appreciate your personal interest in this program of the eradication of tuberculosis. It is our hope that you will extend into our program for the control of

respiratory diseases this same interest that we may approach the same degree of success that we have now approached in tuberculosis control.

Thank you for allowing me to appear before you, sir.

ECONOMIC DEMANDS OF WAR IN VIETNAM

Senator HILL. We appreciate your testimony very much. I am sure all of you here today realize what our problem is. We have got a war going on in Vietnam that is costing a good many billions of dollars, and you have a plea here that is not too favorable, frankly, for increases.

Dr. YEAGER. We realize that, sir.

Senator HILL. The House demonstrated that by reducing certain funds, as you know.

ECONOMY OF PREVENTION

Dr. YEAGER. We recognize that fact, and yet I hate to see money expended for the payment of disability for chronic respiratory diseases, if in a few years by the expenditure of less money we can prevent them.

Senator HILL. You can prevent them. In other words, what you are talking about is a very wise and very sound investment.

Dr. YEAGER. Precisely.

Senator HILL. A very wise and very sound investment, and we certainly appreciate your presentation.

Dr. YEAGER. We appreciate your interest, sir.

Senator HILL. We appreciate it profoundly, Doctor.

FUNDS REQUIRED FOR MULTIPLE SCLEROSIS

I have a statement presented by Dr. Murray Bornstein, associate professor of neurology of the Albert Einstein College of Medicine, New York City, urging additional allowances for the work on multiple sclerosis.

(The statement follows:)

STATEMENT OF DR. MURRAY B. BORNSTEIN, ASSOCIATE PROFESSOR OF NEUROLOGY OF THE ALBERT EINSTEIN COLLEGE OF MEDICINE, NEW YORK, N.Y.

I do not formally represent any organized group. On the other hand, I am sure my experiences in medical research are representative of a large number of professional, medical, and paramedical workers and teachers. And it is these activities of research, teaching, and clinical practice on which the health of our Nation depends. A brief presentation of part of my story, therefore, may help you to understand the tremendous present needs in medical research, the great demands being made on the medical community, and the assistance the Federal Government can offer to meet these pressures.

Ten years ago, a few scientists in a modest laboratory began to apply the relatively new technique of tissue culturing to the problems of health and disease of the nervous system. We take tissues from young animals or embryos and culture them over long periods of time, sometimes up to 6 months. During this period, we maintain these tissues under glass and observe the formation of myelin and the other significant community relationships which take place among these cells. These cultures provide us with a model of what may occur in the brain. Once we had established the living, developing, and functioning model of the brain tissues, could manipulate its environment and continuously watch and photograph its actions and reactions through a microscope, we determined to exploit it in a specific effort. We decided to use it to understand those diseases which have been characterized by a loss of the sheath around the nerve

fiber, called myelin. Multiple sclerosis is the prime example of this type of disease. It attacks people in their early adult years, incapacitating many young wage earners and young mothers, and puts a large economic burden on families and communities.

In the blood of animals with an experimentally induced demyelination, and in the blood of the majority of patients with multiple sclerosis, we found substances which produced typical pattern of myelin destruction. This destruction could be observed in the cultured tissues through the microscope. By enlisting the efforts of an immunologist, we were able to show that the factors in the animals' blood are antibodies and that those in the human are probably the same. Thus strong support was found for the proposed allergic mechanisms involved in the disease.

We then observed an entirely new phenomenon. For over a hundred years, it had been thought that the loss of myelin in the central nervous system of a mammal could not be reversed. This was one of the main reasons for physicians' bleak prognoses for patients with multiple sclerosis. But when we observed living tissue, we found that there are two, or possible three, stages of the disease process which are reversible. We found that the brain and spinal cord tissues possessed the ability to reform myelin once the offending factors had been removed from their environment. These results have since been confirmed in two laboratories working with animals and by two pathologists examining human post mortem tissues. This, of course, has led to further research in attempts to find ways of treating patients by interrupting the progression of the disease and augmenting the rate of recovery. One such means of treatment is now being given a preliminary clinical trial and may soon lead to a full clinical experiment.

Meanwhile, the laboratory work has progressed into other areas which may be important in the understanding of mental retardation and aging. Let me refer to one. So far, we have examined an allergic state as part of the mechanism producing the disease, but we have not yet looked for a triggering mechanism to produce the allergic state. I am certain that you have been made aware of the important animal studies of the slow, latent, or inapparent virus infections. These and similar factors may, in fact, be involved in the production of multiple sclerosis and other prolonged, degenerative diseases of humans. We are just now beginning a line of work which, we hope, will show us how the cultured nerve tissues will behave when they are exposed to the influence of these agents. Apparently they do not kill the cells outright but, rather, take up their living with them and affect their long-term economy. This area of investigation appears all the more significant since it is almost surely related to some of the problems of mental retardation.

In terms of operational cost, the annual budget of this active laboratory endeavor of ours in New York has multiplied fourfold in the course of its 10 years' growth. The increase has permitted an intensification of our studies on multiple sclerosis and an extension of the application of this technique to other neurological diseases. It has also allowed us to supply material to other investigators whose collaborative efforts have greatly enhanced the value of our own studies. In addition, I have been able to train three postdoctoral fellows. They have now established their own laboratories at other faculties and, hopefully, will expand their investigations in a similar manner. We are, of course, continuing to train and encourage properly qualified investigators.

I have mentioned the clinical applications of our investigations. I would, also, like to tell you of the environment in which this development is taking place. Dr. Saul Korey, an outstanding scientist who unfortunately died at 45, was particularly interested in a group of diseases of which multiple sclerosis is an example. He gathered about him an impressive array of neurochemists, anatomists, physiologists, and other scientists to work in close collaboration with the clinical neurologists. This team approach represents a general trend in medicine and offers greater scope for the study of multiple sclerosis and related disorders. Not only have the investigators worked together formally, but they meet together, eat together and, occasionally, as during our recent blizzards, even sleep together. This constant interchange represents a unique force in the mutual inspiration it provided for new and exciting ideas in addition to the steady progression of research from day to day. Moreover, the continuity of the years of clinical experience offers a firm background on which to test promising therapeutic agents.

But all our research laboratories, lecture halls, and teaching hospitals need many investigators, clinicians, teachers, and their assistants. And this brings

me to my point of major concern. We are continuously exposed to expanding demands for our services. Not only is the population increasing, but the average age of the population is shifting to the older groups where neurological disorders are more frequent. In view of the growing need from which there is no escape, it seems to me that the proposed provisions for training teachers, clinicians, and investigators in the neurological sciences are unrealistic and inadequate.

In 1967, 262 training fellowships were granted by NINDB. In 1968, the executive request is for 264 fellowships, an increase of only two, whereas a nationwide estimate of Dr. Charles Kane, President, American Academy of Neurology, would suggest an increase to a total of about 350. The number of training grants in support of graduate students is being reduced from 296 to 227 while the funding has remained about the same, \$18,633,000 for 1968, not enough to even meet the increase in real cost. And, finally, the number of traineeships for teachers and clinical investigators requested in the executive estimate has been reduced from 295 in 1967 to 288 in 1968. I submit that if we continue at this rate, we will not be able to man the presently existing medical facilities and certainly not those being established in response to an increasing need for doctors. We will not be able to respond to the dynamic growth of our research efforts to find the cause and cure of disease. We will not have enough physicians to treat our citizens in hospitals and clinics throughout the country.

FUNDS FOR RESPIRATORY DISEASE CONTROL

Senator HILL. Senator Fred Harris, of Oklahoma, has sent me a letter with which he enclosed a letter sent to him by Mr. Ralph O. Morgan, Jr., executive director of the Oklahoma Tuberculosis Association, urging adequate funds for respiratory disease control.

(The material referred to follows:)

U.S. SENATE,
COMMITTEE ON FINANCE,
May 24, 1967.

HON. LISTER HILL,
Chairman, Appropriations Subcommittee on Labor-HEW, New Senate Office Building, Washington, D.C.

DEAR MR. CHAIRMAN: I am writing to endorse the requests contained in the statement of the National Tuberculosis Association, Inc. and those requests contained in the letter from Mr. Ralph O. Morgan, Jr., Executive Director, Oklahoma Tuberculosis Association, a copy of which is enclosed.

Your careful consideration of these requests would be appreciated.

Sincerely,

FRED R. HARRIS, *U.S. Senate.*

OKLAHOMA TUBERCULOSIS ASSOCIATION, INC.,
Oklahoma City, Okla., May 11, 1967.

Senator FRED R. HARRIS,
Old Senate Office Building,
Washington, D.C.

DEAR SENATOR HARRIS: It is my understanding that the House Appropriations Subcommittee on Labor-HEW is now considering testimony in support of the tuberculosis and respiratory disease program of the Public Health Service. The Oklahoma Tuberculosis and Respiratory Disease Association, representing several hundred laymen and physicians throughout the state of Oklahoma, will deeply appreciate any help you can give us in seeing that the needs of the tuberculosis and respiratory disease program of the Public Health Service are adequately financed.

We request that:

(1) Congress appropriate at least the requested amount of \$17,500,000 for tuberculosis control project grants in order that the campaign to eradicate this major communicable disease can be maintained.

(2) Congress make it possible to launch a campaign against the other serious chronic respiratory diseases, such as emphysema and brinchnitis, by (a) allocating an additional \$1,000,000 to the National Center for Chronic Disease Control for the Program of Chronic Respiratory Diseases and by (b)

supporting a demonstration program of professional education in medical schools and affiliated teaching hospitals, at an initial amount of \$2,000,000. Thank you for your interest and support of this health problem, Senator Harris.

Sincerely,

RALPH O. MORGAN, Jr., *Executive Director.*

ARTHRITIS CENTERS AND SATELLITE CLINICS

Senator HILL. I have a statement from Congressman Richard Fulton of Tennessee urging restoration of funds for the establishment of clinics and satellite centers for arthritic diseases.

(The material referred to follows:)

STATEMENT OF CONGRESSMAN RICHARD FULTON OF TENNESSEE

Mr. Chairman and members of the committee, the Senate has an opportunity to correct an oversight by my colleagues in the House of Representatives.

Provisions in H.R. 10196, calling for appropriations of 1.5 million dollars to the National Center for Chronic Disease Control of the Public Health Service to establish a program of arthritis centers and satellite clinics, was vetoted in the House.

The annual cost of arthritis is 3.6 billion dollars, and 13 million Americans suffer from this crippling ailment. There is an obvious need for these arthritis centers to seek ways to prevent or control arthritis and to speed the discovery of curative or preventive measures. Such clinics would provide early diagnosis, comprehensive care and long-term clinical studies of the arthritic diseases, in addition to providing an educational center for the training of medical personnel and increasing the knowledge of physicians in the care, research and treatment of arthritis.

It is my hope that the Senate will reinstate the provisions and the funds for the establishment of these arthritis centers and satellite clinics.

RESEARCH AND RESEARCH TRAINING IN ARTHRITIS

Senator HILL. I have received a letter from the Governor of the State of Tennessee, the Honorable Buford Ellington, calling our attention to the need for additional funds to support programs of research and research training in arthritis. The Governor's letter will be placed in the hearings for the guidance and information of the committee and of the Senate.

(The letter follows:)

STATE OF TENNESSEE,
Nashville, June 15, 1967.

Senator LISTER HILL,
Senate Office Building,
Washington, D.C.

DEAR SENATOR: I am advised that your Committee for Labor, Health, Education, Welfare and Related Agencies, Ninetieth Congress, considered on June 7, the request for a 1.5 million dollar appropriation to support programs of research and research training in arthritis administered by the National Institutes of Health. The many citizens in our State who are aware of the need for affiliated programs of research, research training and additional facilities for early diagnosis and intensive research and care of those afflicted with this disease are eager to see adequate funds provided for this purpose.

I hope that your Committee will be in a position to act favorably upon this request for appropriation of the public funds requested, which are so badly needed. We have felt for some time, in view of the great number of people who are afflicted by this disease and the tremendous loss of manpower resulting from its ravages, that an accelerated program to combat the disease in all of its forms and results should be inaugurated nationwide as early as possible.

With kind personal regards and sincere good wishes,

Yours very truly,

BUFORD ELLINGTON, *Governor.*

FUNDS FOR PEDIATRIC PULMONARY CENTERS

Senator HILL. I have for inclusion in the hearings a letter to me from Senator Warren Magnuson, of Washington, urging the allowance of \$750,000 for the National Center for Chronic Diseases to provide first year grants of \$150,000 for five pediatric pulmonary centers.

(The letter follows:)

U.S. SENATE,
COMMITTEE ON COMMERCE,
June 19, 1967.

HON. LISTER HILL,
Chairman, Senate Appropriations Subcommittee for the Departments of Labor, and Health, Education, and Welfare, and Related Agencies, New Senate Office Building.

DEAR MR. CHAIRMAN: The President's budget for fiscal year 1968 includes \$143,954,000 for the National Institute of Arthritis and Metabolic Diseases. The House of Representatives in H.R. 10196 has left this request unchanged.

However, the House Appropriations Committee has recommended that greater effort be made to accelerate research on Cystic Fibrosis within the Institute and has directed that \$2 million of the appropriations be devoted to research on Cystic Fibrosis. Recent developments in Cystic Fibrosis research which open up a number of promising new leads were, I am sure, responsible for the House Committee's recommendation.

One of the problems with the earmarking of funds as recommended by the House of Representatives is that other programs in the National Institute of Arthritis and Metabolic Diseases will have to be cut back in order to accommodate this additional emphasis on Cystic Fibrosis. It is my opinion that the need for additional research and training in Cystic Fibrosis merits an increase in Institute appropriations rather than a mere shifting of funds.

Therefore, I would respectfully urge the Senate Appropriations Subcommittee for the Departments of Labor, and Health, Education, and Welfare, and related agencies to carefully consider and approve increased appropriations of \$700,000 for basic research in Cystic Fibrosis and \$250,000 in training.

In addition, clinical research and training in the field of Cystic Fibrosis and related lung diseases is equally important. I have been impressed by the recommendations of the National Cystic Fibrosis Research Foundation that a program for Pediatric Pulmonary Diseases Centers be established in the Chronic Respiratory Control Program of the Public Health Service Bureau of Disease Prevention and Environmental Control.

Thus, I would also respectfully urge an increase of \$750,000 for the National Center for Chronic Diseases to provide first year grants of approximately \$150,000 for five Pediatric Pulmonary Centers.

Sincerely,

WARREN G. MAGNUSON,
U.S. Senator.

FUNDS FOR BLINDNESS AND MYOPIA

Senator HILL. I shall place in the hearings the statement with related papers from Mrs. Sylvia Rachlin of the Myopia Research Foundation.

(The papers referred to follow:)

STATEMENT OF MRS. SYLVIA N. RACHLIN, OF THE MYOPIA RESEARCH FOUNDATION, INC., NEW YORK, N.Y.

Mr. Chairman and members of the Senate Subcommittee on Appropriations for Labor, Health, Education, and Welfare, the Myopia Research Foundation, Inc., 415 Lexington Avenue, New York, N. Y., is rapidly strengthening its crash program intended to save the eyesight of more than a million American children doomed to blindness because they have progressive degenerative or pathological myopia.

Increasing numbers of American doctors are expressing their interest in a comprehensive research program as outlined in our petition.

Since our last appearance before your Honorable Committee, interested doctors from over 60 nations have expressed their willingness to participate in an international research structure in myopia.

More and more, health, civic, and educational groups have offered to cooperate in our all-out program.

Dr. Clifford H. Cole, Chief of the United States Public Health Service, Neurological and Sensory Disease Service Program, Division of Chronic Diseases, Washington, D. C., has shown great interest in helping the myope in every way in which his service program can possibly be involved.

As a myope, in behalf of the more than a million children similarly afflicted in this country alone, I implore the attention and interest of your Honorable Committee in this vital project.

Memorandum to: Congress of the United States, U.S. Senate, Subcommittee on Appropriations for Labor, Health, Education and Welfare.

From: Myopia Research Foundation, Inc., 415 Lexington Avenue, New York, New York 10017.

Subject: Petition for the Establishment of a National Myopia Center.

More than a million American school children with progressive nearsightedness are destined for blindness or near-blindness unless the riddle of the causation and treatment of this condition is solved. Countless adults have suffered loss of employment and become financial burdens to their families and the community because of pathological or degenerative changes in myopia. There is no presently known cure for this blindness.

According to the United States Bureau of the Census, the population of the United States, as of July 1, 1964, was 196,842,000. It is generally estimated that more than a third of the population has myopia in one form or another. At least 1 to 3 percent have progressive degenerative or pathological myopia. These figures speak for themselves.

Certain eminent ophthalmologists estimate that 12 to 18 million myopes are the patients of ophthalmologists. Leaders in optometry compute the number of myopes involved with their discipline to be between 40 and 45 million.

For centuries, myopia has been considered a hopeless affliction. We know that this need not be true. However, in order to effect a breakthrough and halt the alarming increase in myopia, a crash program is urgent.

To accomplish this, the Myopia Research Foundation recommends the establishment of a *National Myopia Center* under theegis of the United States Public Health Service to make possible nationwide, organized and comprehensive interdisciplinary research into the causes, treatment, and prevention of nearsightedness. Doctors, institutions, colleges, and universities with particular interest in, and facilities for, research and treatment of myopia and its related problems would participate in a coordinated approach.

Among the areas in which research is urgently needed are:

General health (including specific eye research; circulo-vascular and other studies in the realm of internal medicine; neurology; biochemistry; and the many other disciplines which should be involved in myopia research), heredity, environmental factors, nutrition, psychology, lenses (including contact lenses), vocational surveys, living habits of nearsighted children and adults, and many other facets involved in comprehensive research.

The National Myopia Center would encompass:

1. A Myopia Service Program under the Neurological and Sensory Disease Service Program of the United States Public Health Service, Washington, D.C.

(a) Collaborative study permitting the creation and development of service programs for myopes throughout the United States, and a standardization of records and reporting forms.

(b) Grants enabling Myopia Service Programs:

1st year	\$1,000,000
2d year	1,500,000
3d year	2,000,000
4th year	2,500,000
5th year	3,000,000

2. Myopia Research Projects in the National Institute of Neurological Diseases and Blindness, National Institutes of Health, Bethesda, Maryland.

(a) Establishment of statistical and analytical procedures by the Biometrics Branch of the National Institute of Neurological Diseases and Blindness.

(b) Grants to the National Institute of Neurological Diseases and Blindness, enabling Myopia Research Projects and establishment of statistical and analytical procedures.

1st year-----	\$1, 000, 000
2d year-----	1, 500, 000
3d year-----	2, 000, 000
4th year-----	2, 500, 000
5th year-----	3, 000, 000

3. The National Registries of Myopia Pathology, a myopia eye study bank, should be developed under the United States Public Health Service. All universities, hospitals, other laboratories involved in eye research and Eye Banks throughout the United States could participate in coordinated clinical research. Participating laboratories would receive eyes of myopes and their families, which have been donated for the purpose of research into the pathology of myopia from its incipience through its advanced stages. Findings would be correlated with other research.

The plan for the National Registries of Myopia Pathology, originated by the Myopia Research Foundation, has received the enthusiastic support of many individuals and organizations across the nation.

A National Myopia Center structured upon this three-phase program would stimulate nationwide interest and participation by myopes with their families and friends in research under public and private health facilities.

The Myopia Research Foundation pleads for your favorable consideration of this program so necessary if our young are to enjoy all the blessings of life.

SCHOOLS OF PUBLIC HEALTH

STATEMENT OF DR. RAY TRUSSELL, PRESIDENT, ASSOCIATION OF SCHOOLS OF PUBLIC HEALTH, AND DEAN, COLUMBIA UNIVERSITY SCHOOL OF PUBLIC HEALTH

FORMULA GRANT CEILING

Senator HILL. Now, Dr. Trussell.

All right, Doctor, glad to have you here with us again, sir.

Dr. TRUSSELL. For the record, I am Dr. Ray Trussell, the president of the Association of Schools of Public Health. I do not have a prepared statement, Mr. Chairman. I just want to highlight a problem with which you have a longstanding familiarity because your name has been associated with these formula grants.

I don't believe I need to take up your time going over the reasons for this grant program.

We have a practical problem facing the schools this year. The ceiling authorization in existing legislation is for a \$5 million formula grant appropriation. Last year, the President's budget carried a \$3½ million recommendation which you, Mr. Chairman, and your committee saw fit to increase to \$3,750,000. And we are very grateful, because just normal growth and development of any organization requires at least 7 or 8 percent increase a year.

NEW ACCREDITED SCHOOLS

This year, we have as of last Friday two new accredited schools of public health, one at Oklahoma and one at Loma Linda. In addition, there are three other universities that are firmly on the record as developing schools of public health.

Senator HILL. That is encouraging, isn't it?

Dr. TRUSSELL. Texas and Alabama and Illinois.

Senator HILL. Yes.

Dr. TRUSSELL. There are others being discussed, but they are not as firmly set up.

We find it a little hard to understand the Budget Director's position on this. We find ourselves in a position of one step forward and one step back.

We would like to see this thing moved ahead a little bit. Just very briefly, I think that our schools probably have been in existence so long that what they do isn't appreciated every day, but in the final analysis, we do train almost all of the people who take public health positions. And we are deeply involved now in the problems of medical care, its costs, its organization, and the training of administrators.

When the Social Security Administration wanted a large outside study of medicare, they went to a school of public health.

SCHOOLS OF PUBLIC MEDICARE

Now the Welfare Administration is negotiating with two schools of public health in respect to medicare, title 19 of the social security amendment. The people who run community mental health centers are trained in our schools. As a consequence of your latest legislation, we must tool up for training of more people for comprehensive planning, and in my own school, for example, I have right now official requests from New York, New Jersey, and Pennsylvania to organize programs for their people.

Senator HILL. You do have those requests today.

Dr. TRUSSELL. Yes, sir; and we are in the process of filling out applications right now.

Senator HILL. Yes.

MEDICAL CARE RESEARCH AND TRAINING

Dr. TRUSSELL. There are not very many schools of public health and we are not terribly large, but there are no other groups of institutions which do the job we do. We recognize the problem facing the Congress relative to the cost of the Vietnam situation, but I would point out, sir, that because of medicare and medicaid, there are some several billion dollars being expended on hospital care, medical care, and our schools are the chief centers for medical care research and for training people in the organization and delivery of medical care. I think that if you look at the members of the meeting tomorrow and Wednesday, on rising medical costs, and if you look at the membership of some of the organizations that are dealing with policy in this matter. and if you look at where it is Federal or State agencies turn for research and training, it is always our schools. I would say conservatively 95 per cent of the time.

Senator HILL. Right.

FULL BUDGET AUTHORIZATION REQUEST

Dr. TRUSSELL. Our schools, Mr. Chairman, have documented a need for \$5 million a year ago. With the two new schools and with the cut-back of \$3½ million on the President's budget, we are really in desperate trouble.

Senator HILL. You are in a squeeze, aren't you?

Dr. TRUSSELL. Yes, sir; that is the most polite way I have heard it put so far. As president of the association, I would be remiss if I didn't respectfully request that you recommend the full \$5 million authorization. I know there are problems. I want to again express our gratitude. Without your help we just wouldn't be in business, quite frankly.

Senator HILL. Well, we certainly appreciate your being here, Doctor. You have made a good strong case. We are mighty glad to have you.

Dr. TRUSSELL. Thank you very much, sir.

Senator HILL. When we wage the battle for these appropriations we have to have strong support.

Dr. TRUSSELL. Without trained people, you are not going to get it done.

Senator HILL. We certainly thank you, Doctor. Thank you very much.

FORMULA GRANT TO STATES UNDER PUBLIC HEALTH SERVICE

I shall place in the hearings a letter which I have received from Dr. Ira L. Myers, the State health officer of the State of Alabama, in which he expresses disappointment over the action of the House in disallowing \$2.5 million for formula grants to States.

(The letter follows:)

STATE OF ALABAMA,
DEPARTMENT OF PUBLIC HEALTH,
Montgomery, Ala., June 9, 1967.

HON. LISTER HILL,
*U.S. Senate,
Senate Office Building,
Washington, D.C.*

DEAR SENATOR HILL: I appreciate your attentive ear to our needs and suggestions. Knowing how busy you are, I hesitate to express an interest unless it is of utmost importance.

I have noticed that the House of Representatives has just passed H.R. 10196, the appropriation bill for 1968 for the Department of Health, Education, and Welfare and labor. I am greatly concerned about the reduction of \$2.5 million of the requested formula grant to states. This reduction further inhibits the effective Partnership for Health program under Public Law 89-749. We will have real difficulty in devising innovative or forward-looking programs without a substantial increase in funds to carry out these programs. State Health Officers throughout the country are dependent upon your Committee in the Senate and the support of men of your stature and foresight to exert every effort to secure the restoration of this reduction if no further increases are possible.

I trust that in all this stress you are caring for your personal health adequately. Please give my regards to your fine wife. With warm personal regards, I am,

Sincerely yours,

IRA L. MYERS, M.D.,
State Health Office.

TRAINING GRANTS FOR SCHOOLS OF PUBLIC HEALTH

Senator HILL. I shall place in the hearings the letter which Senator Fong, of Hawaii, addressed to the committee regarding the need for an increase in the 1968 appropriations for training grants for schools of public health.

(The letter referred to follows:)

U.S. SENATE.
COMMITTEE ON THE JUDICIARY.
June 19, 1967.

HON. LISTER HILL.

Chairman, Senate Appropriations Subcommittee on Labor-Health, Education, and Welfare, and Related Agencies, U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: Enclosed for your consideration is a copy of letter from Dr. Richard K. C. Lee, Dean of the School of Public Health, University of Hawaii, in which he points out the need for an increase in 1968 appropriations for training grants for schools of public health.

As you know, the House of Representatives approved the full amount of the 1968 budget request, \$3,500,000, but this is a decrease of \$250,000 from the amount Congress appropriated for this program in fiscal year 1967. With two new schools of public health now entitled to allocations, it seems clear the older schools will receive reduced training funds compared with 1967.

I know of no evidence that the need for training public health personnel has declined. Therefore, I hope the Subcommittee will approve at least as much as Congress approved last year for this important program.

With kind regards and aloha,

Sincerely yours,

HIRAM L. FONG.

UNIVERSITY OF HAWAII.
SCHOOL OF PUBLIC HEALTH.
Honolulu, Hawaii, June 15, 1967.

HON. HIRAM L. FONG,
U.S. Senate,
Washington, D.C.

DEAR SENATOR FONG: The U.S. Senate Committee on Labor and Public Welfare is holding hearings concerning the continuing appropriation of Hill-Rhodes funds to schools of public health. From what we have learned about President Johnson's budget for 1968 and the House action, despite an authorization of five million dollars in Section 309(c) of the Public Health Service Act, it is \$250,000 less than the 1967 appropriation. Concurrent with this reduction in the appropriation of the Hill-Rhodes funds, two new schools of public health have been accredited; namely, Oklahoma and Loma Linda. The reduced appropriation will have to be divided to include the two new schools.

As you know, the University of Hawaii's School of Public Health has benefited since its accreditation in 1965 from the Hill-Rhodes grants for training of health personnel. The appropriation of 1967 under Section 309(c) of the Public Health Service Act provides for 3.75 million dollars. Our share amounted to \$102,700. The House budget for 1968 of \$3,500,000 plus the accreditation of the two new schools will reduce our share to about \$80,000. This is a critical reduction for us, as we have used these funds primarily for teaching personnel and related needs.

Congress in recent years has passed important and valuable federal legislative programs in the field of public health, including Medicare, Medicaid, Office of Economic Opportunity, Comprehensive Health Planning, and Regional Medical Programs, all of which have increased the demands for trained health personnel.

If the present President's budget can be restored to the fiscal year 1967 level, a more modest cut to our School than mentioned above would occur. I urge that the allocation be increased by at least \$500,000 over last year's appropriation so that no cuts will be sustained by present schools of public health. This additional amount of money would take care of the new schools and such other expenditures as needed in this program.

I hope you will be able to discuss our problems and needs with members of the U.S. Senate Labor and Public Welfare Committee of which Senator Lister Hill of Alabama is chairman.

Sincerely,

RICHARD K. C. LEE, M.D.,
Dean.

ACCIDENTAL INJURIES AND DEATHS

STATEMENT OF DR. JOHN HOWARD, PROFESSOR OF SURGERY,
HAHNEMANN MEDICAL COLLEGE AND HOSPITAL, PHILADEL-
PHIA, PA.

REDUCTION

Senator HILL. Now, Dr. Howard.

Dr. HOWARD. Yes, sir.

Senator HILL. Glad to have you back, Doctor.

Dr. HOWARD. Thank you, Senator Hill.

Senator HILL. Off the record.

(Brief discussion off the record.)

Senator HILL. All right, Doctor, we are delighted to have you here, and you may proceed now in your own way, sir.

Dr. HOWARD. Senator Hill, as we pointed out last year, 52 million Americans are injured each year, 100,000 dying and 400,000 being permanently disabled from accidents. Over 2 million experience heart attacks each year; 40 million visit our hospital emergency departments each year, and many shrug their shoulders and say that nothing can be done.

PITTSBURGH SURVEY

Senator Hill, something can be done. Perhaps a look to the past may help us gain some vision for the future. It was in 1907 that the publication of the Pittsburgh survey came as a great shock to people everywhere. This chart represents the death calendar of Allegheny County, published in 1907.

It describes many workers, how many workers died from industrial accidents in 1 year in Allegheny County. Each cross on that calendar represents one accidental death.

Senator HILL. Each cross?

Dr. HOWARD. Each cross. Hardly a day went by without a fatality, and most days showed two, three, four, and even more fatalities. The figures reflected only one industrial county. What must have been the industrial accidents across the country that year?

Senator HILL. All in one industrial county, on this chart.

Dr. HOWARD. This is Pittsburgh.

What the investigators in these, in the newspapers of that time wrote about the crippling injuries was equally jarring: "The Pittsburgh direct," they wrote, "annually sends out of its mills, factories, railroad yards and mines, 45 one-legged men—100 hopeless cripples who must walk with a crutch or a cane; 45 men with a twisted, useless arm; 30 men with an empty sleeve; 20 men with but one eye; 60 with a half a hand gone; 70 with no legs," and so on, "500 human wrecks in all, and time goes on," the report says. "There has been no respite. Each year has turned them out as surely as the mills ran full and the railroads prospered, as surely as times were good. Ten years would make more than 5,000, enough to create a city of cripples."

PREVENTION AND TREATMENT

Well, that year, there were 526 death crosses in Allegheny County. In 1957, half a century later, the Pittsburgh survey was repeated.

The result of joint efforts and prevention and treatment had made tremendous strides. And there you see the month by month, in 1906-07 survey compared with the 1956-57 survey.

Something had been done.

Senator HILL. Something surely had been done.

EMERGENCY HEALTH SERVICES

Dr. HOWARD. And it had been done effectively.

Senator Hill, the problem of emergency health services, and we are talking now about first aid, ambulances, treatment in ambulances, communications between ambulances and hospitals, and the emergency-room deaths of hospitals.

The problem is that it is not limited to a physician problem. It is a communitywide program. One has to go out and organize the communities and the doctors haven't known how to do it. They know how to organize the hospitals, but they don't know how to organize the communities, and similarly, the local communities haven't known how to do it, and so we have turned to Public Health Service, and said "Here is the problem. Fifty-two million being injured, 42 million visiting in emergency rooms. We must have an organized communitywide program, and it mustn't be just a physician program."

We have considered it the neglected disease, accidental death and disability, the neglected disease of modern society, but we don't have solid facts on which to build, always.

MILITARY SERVICES

We know that the military surgeons, the military services have organized their rescue and first aid, their transportation. They have done a tremendous job with it. We have trained their battalion-aid servicemen for careers in first aid and transportation, but in this country, very little of this has been done.

CIVILIAN SERVICES

Many of our ambulances are run by morticians. Many of them may not have finished public school, many of them have had no training whatsoever. How different this is from the standard that we hold once the patient reaches the hospital, where the doctors, the nurses, laboratory technicians, even the practical nurses must meet certain standards and be licensed.

But this isn't true forward of the hospitals. We have set no standards. Even the hairdresser has to be licensed, Senator Hill, has to meet certain standards, but not the people who deal with this on a life-and-death basis.

AMBULANCE

The ambulance itself has never been developed beyond a means of transportation. Little study, little thought, critical analysis, has gone into making it a means of treatment en route. Communications between the ambulance and the hospital hardly exists. Your taxi driver communicates with his base of operation. The astronaut talks to the ground control, but the ambulance driver brings in his wounded, sick, and wounded unannounced and unexpected. This isn't right.

EMERGENCY ROOMS

Furthermore, most emergency rooms are small and ill-equipped, receiving 40 million Americans a year; 10 million of them children.

Senator HILL. 40 million a year?

INTERNS

Dr. HOWARD. 40 million a year; 10 million children. They are staffed by interns. A staff which must treat on a moment's notice the most critically injured, the most varied life-threatening emergencies, they are treated by the least trained.

Senator HILL. The least trained.

Dr. HOWARD. Often the nonlicensed physician, and few training programs exist for improvement. As a result, many of our patients die, Senator Hill. How many, neither you nor I know.

Senator HILL. But you feel that many could be saved?

Dr. HOWARD. We feel that many could be saved. Now what are we doing? The American College of Surgeons is represented here today, and we will tell you what they are doing.

ACCIDENTAL DEATH AND DISABILITY, THAT NEGLECTED DISEASE OF MODERN SOCIETY

The National Research Council, the National Academy of Sciences through its committees has published a white paper acknowledging the problem and outlining a course of action, entitled "Accidental Death and Disability, That Neglected Disease of Modern Society."

COMMUNITY PROGRAMS

The American Medical Association has in the last year organized one of its major committees on emergency medical services, and is now planning its second national conference in an effort to upgrade these services.

Now, on July 8 of this year, the second meeting will be held in Philadelphia in an effort to organize an American Trauma Society comparable to the American Heart Association, the American Cancer Society, to bring the community into the program.

Senator HILL. There is going to be a meeting in Philadelphia, you say, this year?

Dr. HOWARD. The meeting July 8 of this year will be the second meeting in an effort to get this program off the ground.

The American Medical Association, the American College of Surgeons, the National Research Council have each acknowledged the responsibility of the Public Health Service to create these community programs. We need their help, Senator.

EMERGENCY MEDICAL SERVICES

Emergency medical services are not just physician programs. They must be organized forward of the hospital. And the profession, the medical profession, can't do it by themselves.

This is why we ask your help. Give them the tools with which to work. What value in it is there, Senator Hill, if we build great hospi-

tals and train great physicians, but the patient is dead when he gets to the hospital?

Senator HILL. Before he gets to the hospital or to the physician. Is that right?

Dr. HOWARD. Give them the tools. My recommendation to Public Health Service was that they ask for millions of dollars that they didn't ask for.

Senator HILL. How much did you recommend they ask for?

POOLING AND FUNDING

Dr. HOWARD. That you pool the national cancer program, pool the program of National Safety Council, come up with a figure of around \$200 million, which would be about 2 percent, \$200 million would be about 2 percent of what accidents are costing us a year.

APPEAL

But the figure that they came up with is a very reasonable figure, and having gotten it by the Bureau of the Budget, I think, Senator Hill, that you should give them the help that the House Appropriations Committee denied them.

Now you see, the Transportation Department, the Transportation Department has acknowledged their responsibility at the State of organizing emergency medical services at the State level. We have said to the Public Health Service, "This is your job, to go and organize emergency medical services on and off the highway."

TRAFFIC SAFETY PROGRAM

And with the traffic safety program booming, we have got to keep pace with it, in providing the care.

Senator HILL. Booming all the time.

Dr. HOWARD. The highway safety industry is booming, in the terms of prevention, but they have also given to the Public Health Service the responsibility of providing the care, and you created this when you created highway safety agencies, you created the necessity of providing emergency medical service.

Now they have got to go to the State level and provide these services, set the standards, get the programs going, and on the one hand, you have given them the responsibility, and yet, when they ask for the financial support necessary, so far, you haven't given it to them.

Senator HILL. They haven't gotten the money they need to do the job that we have given them.

Dr. HOWARD. We are asking you, Senator Hill, to get it for them.

Senator HILL. All right, thank you very much for your statement, Doctor.

Fine, we want to thank you very much. Thank you for your most helpful statement.

(The prepared statement of Dr. Howard follows:)

I am Dr. John M. Howard, Professor of Surgery at Hahnemann Medical College and Hospital in Philadelphia, chairman of two of the committees relating to Trauma, of the National Academy of Sciences, including the newly established committee of the National Academy of Sciences on "Emergency Medical Services," and one of their authors of their publication "Accidental Death and Dis-

ability: The Neglected Disease of Modern Society". I am a member of the Committee on Emergency Medical Services of the American Medical Association.

Last year, I appeared before the Senate Appropriations Committee on June 3, on behalf of the Accident Prevention Division of the United States Public Health Service. I am deeply grateful to this Committee for the privilege of again appearing before you, as a voluntary witness in support of the appropriation request of the Emergency Health Services Branch of the Public Health Services.

I hope that the foregoing list of involvements will indicate to you my deep concern as a surgeon and as an American citizen over this nation's failure to accept its full responsibility for reducing accidental deaths and injuries. The interest of this Committee—and the growing public awareness of the problem—is extremely heartening to me.

For many years I have also been concerned over the desperately inadequate emergency transportation care provided for the sick and injured in a great percentage of the area of the country.

Possibly this is because so little attention has been focused on the magnitude of the problem. Public and governmental attention *has not been* centered on this situation as it has been on other serious problems—cancer, polio, heart disease—serious problems but of lesser magnitude perhaps, on the life expectancy of our people, than is accidental death, for accidents take their toll from our children and from our younger people.

The terrifying statistics of the awesome annual toll of accidents have not been given the front page attention they deserve. They are usually given a small paragraph or two at the back of the newspapers, and their impact is lost.

But let me point out these statistics to you in all their gravity and magnitude.

Accidents and injuries are the *first cause of death* among all Americans between the ages of 1 to 37. This decimates our nation of its citizens during their most productive and healthiest years. As a matter of fact, more Americans are killed by accidents alone in one year than were killed during the entire Korean War.

Accidents and injuries are the fourth leading cause of death among Americans of all ages—following the diseases we normally associate with elderly persons—heart disease, cancer and stroke.

Last year alone there were 112,000 accidental deaths; 53,000 of them on highways, 28,500 in homes and 14,000 killed at work.

Fifty-two million Americans, one fourth of all our population, are injured in accidents in the United States every year.

The gross inadequacies of our emergency health services system are due in part to the lack of public and governmental understanding of the seriousness of the problem and the critical lack of personnel and funds. It involves, in part, organization of services in the overall community, not just in the hospital. As a result the practicing physician, often hospital oriented, has not known how to tackle the problem. He is now concerned, however, must require guidance from the U.S. Public Health Service to make his efforts effective.

Two recent developments have sharply focused attention on ambulance services; more than half of which are now supplied by morticians. The first was the Federal Wage and Hour Administration ruling that ambulance service is considered interstate commerce, and operators of such services must comply with the federal minimal wage laws. As a result, in a large number of areas, particularly in smaller communities where the funeral directors have supplied ambulance services (primarily because they often have the only practical size vehicles available), these directors have decided to discontinue their services. The second development was the promulgation of standards for ambulance service for which payment will be made in the Supplementary Medical Insurance portion of the Health Insurance for the Aged program. Although minimal, these standards cannot be met by many funeral directors. These developments have forced communities to review their emergency services programs, and to look to state health departments and the Public Health Service for guidance.

Let us pause for a moment at this point to note that in one of the most affluent countries in the world, the injured and stricken are often hauled to hospitals in vehicles originally designed for transporting the dead, or in second-hand station wagons. These vehicles, occupied by the injured and ailing during the time when moments mean the difference between life and death, are all too often in worse mechanical condition than the vehicle which delivers meat to your local supermarket.

And, although your local meat-cutter or hairdresser must be trained, familiar with the tools of his trade, and in the latter case qualified by an examination

and licensed, there are no standards for the ambulance attendant. He may have had no training—*Not one day*. How different this concept is from the training which you require of those who handle the patient after he gets to the hospital—provided, of course, that he has survived the initial handling.

Taxi-cabs these days have instant communication systems with each other and their dispatch offices. Yet *ambulances* have no way of communicating with the police, other ambulances, or the hospital to which the victim is being brought, and where all should be in readiness for emergency work. Certainly, our injured deserve as good communications as our taxi-fleets have. All too often, even the emergency rooms are over-worked, under-staffed and inadequately so, without a graduate physician on duty when a serious case arrives.

These are facts, and only a few of the total, that account for the enormously large number of unnecessary accidental deaths of our people each year.

It has been heartening to note during the past year the groundswell of interest, by the public and by the government, in this acute national health problem.

Some of this interest is reflected in the report of the National Academy of Sciences and the National Research Council, on "Accidental Death and Disability: The Neglected Disease of Modern Society".

There is also the Report of the President's Committee for Traffic Safety on "Health, Medical Care and Transportation of the Injured".

Public attention has been focused on the problems of highway safety, and the role played by the lack of automobile safety features in the mounting deaths on the nation's highways. As a result, President Johnson and the Congress are giving high priority to legislation on automobile safety and have established the new Department of Transportation and the National Highway Safety Agency, which is now under the jurisdiction of the Federal Highway Administrator of DOT. It is reassuring to me to know that the Public Health Service has established close liaison with that Department, and that duplication of effort in medical and health matters is being avoided. The Department of Transportation and The Public Health Service have agreed that the responsibilities for emergency health services on the highways should be delegated to the Public Health Services.

With the emphasis on highway safety, President Johnson started placing executive and legislative emphasis on the role of the Public Health Service in the recent law for reorganization of the Service. This new act, the Comprehensive Health Planning and Public Health Services Amendments of 1966 (P.L. 89-749) underscores the development of a creative partnership among voluntary and official groups at local, state, and regional levels in the development of comprehensive health planning.

As President Johnson expressed it, the changes "will bring to all Americans a structure modern in design, more efficient in operation and better prepared to meet the great and growing needs of the future."

Each of the five new Bureaus of PHS have a clearly defined central mission. Under the Bureau of Health Services, the Division of Direct Health Services has the Emergency Health Services Branch, which is charged with the main responsibility for attempting to make this country a safer place to live.

Resolutions and statements by lay and professional organizations fortify the beginnings that have been made toward the consideration of the number one problem of the nation's safety.

The Public Health Service's Emergency Health Services program represents the beginning effort toward this greatly needed work—an effort which must not now be torpedoed by the elimination of essential funds from next year's budget.

Are we to kill the beginning efforts, and thus delay the ultimate victory in our war to reduce the daily needless death toll in this country? This problem, already acute, could be compounded many times over by the denial of these funds, since it might be interpreted as a lack of interest or downgrading of importance of the need for finding an early solution.

The main difficulty in solving our problem, is the great gap between knowledge and application. We know how to do a better job. Medical science and technology too, have made great strides that are not yet universally applied. Our lack of standards lies mostly in the failure to adopt, apply and disseminate information and knowledge that we now possess.

We have had no coordinated effort in the past, and this problem has been compounded by public apathy.

This serious gap in our Public Health resources can easily be closed. The presently developed interest in reduction of accidents is mount-

ing rapidly. We need now to mobilize the Nation's available resources, which are many, and to provide leadership and guidance. This leadership is available. Not only in the Public Health Service and allied governmental agencies, but from the entire spectrum of the medical profession, where leaders endorse this program. The need now is to provide the necessary funds to get the program underway.

Public Health Service proposals for the new Emergency Health Services include: care of the victim at the site, during transportation, and treatment in the hospital emergency room or similar facility. These are to cover the early phases when promptness and efficiency are crucial.

First aid, rescue squads and ambulance crews must be schooled in basic first aid, in advanced specialized techniques and casualty handling procedures, and must have adequate supplies and equipment. We need to stage nationwide demonstrations of these techniques, and to increase vastly our training efforts.

In emergency rooms at hospitals, there is need for adequate staffing and equipment to handle sudden numbers of emergency patients, with provision for calling emergency medical personnel to duty at short notice.

Ambulance and hospitals need two-way radio communications with one another and with police and fire units. We need a central coordinating authority for community emergency medical services which has radio contact with medical and other emergency units.

Development of a helicopter system, such as the Armed Forces are employing so successfully in Vietnam, has equal civilian application. This may be the main accident rescue technique of the future, since the Department of Defense has found that in Vietnam, casualties picked up by helicopter from the battle-field are, on the average, delivered to the hospitals for definitive emergency care, *within thirty minutes*. And these casualties are getting expert first-aid care all along the route to the hospital.

Other parts of this program include, field studies, technical assistance, expansion of training; for all medical and para-medical personnel, intensive short-term training courses for ambulance attendants, plus licensing and up-grading of all standards for those who care for the injured and critically ill.

There are many advantages to centralizing these programs. The Public Health Service has had the traditional responsibility for the nation's health services, and it can best preserve the basic pattern of federal and state co-operative endeavor established over the years.

It cannot be over-emphasized that proper *funding* is essential beginning this program properly. The need is clear, the responsibilities also. And, gentlemen, we should not be talking about investing thousands but the *millions* of dollars which we ought to be allocating to so critical a need.

The needs include demonstrations, surveys, and studies to establish requirements, list existing facilities, resources and deficiencies. It is necessary to set standards for training medical personnel, for equipment and transportation, communications, and emergency facilities. Also needed are training films in first aid and rescue operations, and an information clearinghouse to collect and disseminate health informational materials. All of these essential support activities will permit earlier attainment of the high goals to which we aspire—the relief of suffering and the saving of human lives. The heart of this program is people—our people, American men, women and children.

From a national defense standpoint, the Emergency Health Services program has particular significance and value. It will better enable us to meet threats from hostile military action, while assuring us of resources to respond to the needs of our citizens in natural disasters.

The proposed system is *now demanded* by our day-to-day needs and it would be vital in the event of any war in which this nation became a battleground.

The American Medical Association has joined in the effort to upgrade emergency medical care in the United States through concerted efforts of its societies

at the national, state, and local level. As a member of the medical profession, and of the American Medical Association, I am proud of the fact that our membership has intensified its efforts in the field of Emergency Health Services, and that it is taking vigorous steps to implement this work. Recently a conference in which representatives of the Public Health Service participated, was held by the American Medical Association to draft specific programs of action and activities.

I approve and applaud the emphasis that the Public Health Service is giving to Emergency Health Services. Further, I endorse and will cooperate in every way possible with this program to assure that the ill and the injured receive the care which they require, and to which they are fully entitled.

I do not believe that the American People will long tolerate apathy on the part of our profession or our government toward this critical gap in our national health and medical resources.

FUNDS FOR HEALTH MANPOWER AND VOCATIONAL REHABILITATION ADMINISTRATION

Senator HILL. I have a letter from Senator Magnuson in which he urges the subcommittee to add additional funds for Health Manpower and for the Vocational Rehabilitation Administration which will be included for the hearings for the benefit and guidance of the committee and for the Senate.

(The letter follows:)

U.S. SENATE,
COMMITTEE ON COMMERCE,
Washington, D.C., June 30, 1967.

The Honorable LISTER HILL,
Chairman, Senate Appropriations Subcommittee for the Departments of Labor and Health, Education, and Welfare, and related agencies.

DEAR MR. CHAIRMAN: President Johnson's budget for fiscal year 1968 includes \$170,413,000 for Health Manpower to be allocated to education and utilization, and \$65,484,000 for the Vocational Rehabilitation Administration for research and training. The House of Representatives, in H.R. 10196 reduced these allocations respectively by \$6,250,000 and \$3,044,000.

I respectfully urge the Senate Appropriations Subcommittee for the Departments of Labor and Health, Education, and Welfare, and related agencies to carefully consider and approve a restoration of the original budget requests in these areas. The need for these funds to meet future problems, and the productive results of the past at centers now in operation can only illustrate the crisis ahead if the funds are not restored. The impact of the reduction will have to be borne by established programs, and will hence gravely influence the future of rehabilitation care in our Nation.

We face a serious problem in health manpower now for several reasons. One is that we now have an increasing proportion of our population requiring more health services than the middle age group. This is part of the price we pay for medical advances that have saved lives and extended the life expectancy of our citizens. We have established populations that need relatively more habilitation services than curative services. An oldster who survives a stroke will have to not only visit a physician many times, but will require supportive services such as nursing, physical therapy, occupational therapy, dietitian, social worker, etc.

Another reason for increased demand on manpower is the infusion of federal funds into numerous health programs. People previously not getting care are now funded through Medicare or Medicaid and some of the Children's Bureau projects. The funding of these programs by Congress was a very timely gesture, but perhaps all of us did not foresee the tremendous demands that would be made on the health industry. We are falling behind in the supply of health professionals to meet the demand.

Various means are in use to fill the gap in trained personnel as quickly as possible. These ideas include utilizing discharged corpsmen from the Armed Services for use in civilian life and training a portion of the numbers of students in junior colleges who do not have the need nor the desire to complete college training yet could find excellent careers if vocational programs were designed for

interests in this area. Also, non-professional personnel such as nurses aids, physical therapists aids, public health nurses aids, etc., are trained on an experimental basis. Innovations such as these, and many more, are needed now to meet the community health needs.

In my own State, as I am sure it is true across the Nation, there are several examples where the present demand can be illustrated. For example, the Children's Orthopedic Hospital in Seattle has had a completed wing standing empty for the past eight months for lack of nurses. It does not seem to me to be economical or consistent to provide for a large segment of the population the insurance to make available needed medical services and then to neglect the resources necessary to train the professionals who can deliver these services.

In another area also, but one related to the problem of not enough trained personnel to meet the demand, I feel the Senate should restore funds to meet the original budget request. The Vocational Rehabilitation Administration needs the funds it requested in the area of training and research. As the rehabilitation program just now begins to feel the full impact of the 1965 Amendments to the VR Act, and the broadened approach to rehabilitation, it should be encouraged to continue its socially and economically worthwhile programs by being allocated the necessary funds.

Rehabilitation centers now in operation have made significant gains in improving the lot of the physically handicapped, both through clinical services and advances directly attributable to research programs. But, this is only an approach to future potential.

Problems of rehabilitation vary directly with the incidence of injuries and chronic diseases, both of which are currently on the increase. The war in Vietnam has added measurably to the already alarming statistics demonstrating sharply rising requirements for trained personnel to provide the rehabilitation care needed across the spectrum of our population, in all age groups.

The University of Washington Rehabilitation Center is the only comprehensive rehabilitation program in the entire Pacific Northwest. Their programs illustrate a fairly typical curriculum in this area. At present, they hope to expand their courses to include Rehabilitation Nursing and Physical Therapy leading to a Master of Science degree, but if the present reduction is sustained the future of these programs looks very dim.

Appropriations in the above-mentioned two areas have been good investments in the past, and the gross return in rehabilitation is a goal of unrateable value for the future. Therefore, I respectfully urge your Subcommittee to consider and approve a restoration of the original budget request.

Sincerely yours,

WARREN G. MAGNUSON,
U.S. Senator.

RESEARCH, TRAINING, AND PATIENT CARE

STATEMENT OF DR. FRANK H. KRUSEN, TEMPLE MEDICAL SCHOOL OF PHILADELPHIA, PA.; ACCOMPANIED BY DR. ELLWOOD

CONTINUED PROGRAM MOMENTUM

Senator HILL. Now, Dr. Krusen.

Dr. KRUSEN. Senator Hill, may I bring Dr. Ellwood with me, sir?

Senator HILL. Yes, we would be glad to have Dr. Ellwood, too.

Dr. KRUSEN. Mr. Chairman, I see a definite pattern as I listen to the testimony this morning. We physicians who are concerned with research and training and patient care are turning to you, sir, as our trusted and revered champion, to stem any tendency which might develop from inadequate appropriations, so that the wonderful momentum that has been given to our whole medical research training and patient care effort can go forward.

We represent, Dr. Ellwood and I, the American Rehabilitation Foundation. I am chairman of the medical committee, and professor

of physical medicine and rehabilitation at Temple University in Philadelphia. It is a privilege always and a pleasure——

Senator HILL. You and Dr. Howard come from the same little town.

Dr. KRUSEN. Yes, sir. It is a privilege and a pleasure to appear before you.

Senator HILL. We speak of Philadelphia as the cradle of American liberty. I think it is the cradle of American medicine too; isn't it?

Dr. KRUSEN. Yes; we Philadelphians really contend that this is the case. In fact, there was the father of a distinguished Senator sitting before me who trained in Philadelphia.

Senator HILL. And a man named Dr. Samuel D. Gross, a very fine surgeon.

Dr. KRUSEN. It is also a pleasure to appear before you, sir.

Senator HILL. We are always happy to have you here.

Dr. KRUSEN. It is frankly difficult, Senator, to find new words in which to frame an appropriate tribute to your broad and detailed knowledge of health and medicine, and your deep and compassionate understanding of the needs of the ill and afflicted.

PREPARED STATEMENT

I have a statement here, sir, that I would like to submit for the record.

Senator HILL. We will have it appear in full in the record, Doctor. (The statement follows:)

Mr. Chairman, it is a privilege and a pleasure to appear before you and your distinguished colleagues and to once more have the opportunity to acknowledge the debt of gratitude which medical scientists and citizens in all walks of life owe to you for your contributions to the nation's health. It is, frankly, difficult to find new words in which to frame an appropriate tribute to your broad and detailed knowledge of health and medicine and your deep and compassionate understanding of the needs of the ill and afflicted. I will simply say that I always feel that it is somewhat gratuitous and even condescending to presume to expound on matters of health and the science of medicine to the chairman and members of this body.

However, my purpose in appearing before you today is to appeal to you in defense of a program with which you are intimately familiar. I refer, of course, to the Regional Research and Training Centers sponsored by the Vocational Rehabilitation Administration. The chairman was the chief architect and leading proponent of the legislation that made these programs possible, an achievement that marked a momentous turning point in the history of rehabilitation medicine. The creation of these centers produced effects that went far beyond the appropriation of funds. It infused the entire field of rehabilitation with a new hope. It gave encouragement and raised the morale of a branch of medical science that is struggling against heavy odds to meet an enormous burden of responsibility and fulfill needs of overwhelming magnitude. The regional research and training program was the first step toward governmental support of research in rehabilitation medicine that paralleled that devoted to research in the categorical diseases. Moreover, this program embodied a concept of exceptional vision and far-reaching value. It introduced the concept of regional programs, linking research activities with medical and paramedical education, directly affiliated with clinical programs of rehabilitation patient services and facilitating continuing education of community health personnel in the immediate vicinity of the research and training program.

In making this program possible, the chairman's legislation created the prototype now visible in the regional medical programs on heart disease, cancer and stroke. In fact the report of the President's Commission on Heart Disease, Cancer and Stroke referred explicitly to these VRA centers for research and training as examples of the proposed regional medical programs.

It is deeply disturbing to me, as it is, I am sure, to the chairman, that the regional research and training programs in rehabilitation, now stand in jeopardy. (I cannot omit to pay tribute to the late Congressman John F. Fogarty, another steadfast and dedicated friend of health and medicine, who took up the original legislation for the regional rehabilitation centers in the House and worked for its passage with great vigor and personal conviction.)

The reduction in Vocational Rehabilitation Administration budgeted appropriations for its entire program of research and training will have grave consequences. It is my understanding that the original VRA budget requested a \$6 million increase for research and training. The increase was to be allocated equally between categorical projects in research and training and the regional centers. The budget including this increase was approved by the President and the Bureau of the Budget. It was nevertheless reduced to \$3 million. This will mean a cut of \$1.5 million in the allocations to the regional centers. This action will prevent any expansion whatever of present programs and will, of course, make it impossible to establish additional centers. In sponsoring this original legislation and supporting the steady expansion of this program in subsequent years, the chairman has made it evident that he envisions a vital, dynamic and growing program. The fundamental concept embodied in the original legislation made it indisputably clear that the present centers were prototype centers to develop momentum for expansion within the existing new programs and to provide the pattern for additional programs elsewhere. The only possible justification for a reduction in this appropriation is the assumption that the problem of disability is diminishing, or that the centers are incapable of fulfilling their purpose. The magnitude of the problem of chronic disability, far from diminishing, is constantly increasing, affecting more than 10 per cent of the nation's population. The reduction would be less alarming if it cut back on an appropriations base of a substantial or even adequate scale.

While the chairman and Miss Mary Switzer have exerted valiant efforts to increase support of medical rehabilitation within the statutory limitations of the Vocational Rehabilitation Acts, it must be recognized that the support we receive is pitifully inadequate to the scale and compelling urgency of the problem of disability. It is imperative to pursue analytical studies of the causes and the courses of diseases in the search for cures and preventive measures. This is the mission of The National Institutes of Health. But I appeal to you not to forget those suffering millions for whom the cures and preventive measures have come, or will come, too late. In seeking ways to avert catastrophe, let us not neglect the casualties that have already occurred.

For the sake of clarifying a prevalent misconception, it should be stressed that research in rehabilitation medicine is a distinctive branch of scientific investigation, employing a unique body of knowledge, special techniques and directed toward special goals. It may be assumed that categorical studies related to cardiovascular disease, neurological and metabolic disorders and neuromuscular problems are fulfilling the need for research in our field. There are basic distinctions between categorical research studies and those pursued by specialists in rehabilitation medicine.

Categorical studies deal preeminently with the origins and pathological processes of disease, investigating their causes and tracing their course. Rehabilitation medicine deals primarily with consequences of disease and severe trauma. Much of our research is devoted to a complex, many faceted regime of patient management. Such research is intensely demanding and is capable of producing more exact results than is usually assumed. The rehabilitation team functions as a cohesive, carefully coordinated unit. The constant refinement of this multidisciplinary regime through research dealing with group dynamics, motivational and behavioral studies, leadership, and the analysis of various management techniques related to outcome, is one of the major categories of rehabilitation research.

Biomedical and biomechanical engineering research are a second major branch of rehabilitation research. Biomedical research, deals for example, with the supremely important problem of organic and psychic deterioration brought on by immobility. Biomechanical engineering is developing more and more sophisticated electronic and mechanical substitutions for impaired, paralyzed and amputated limbs and electronic stimulation of neuromuscular systems.

As I reflect on the achievements of the regional rehabilitation centers to date and assess the enormous potential present in their present and projected research studies, I am deeply saddened at the possibility that these vital and promising

activities may lose their momentum and become subject to stifling limitations by lack of funds. It is also distressing to realize that so many excellent sites for additional programs may be deprived of the opportunity to make similar contributions. A study recently completed by the Commission on Education in Physical Medicine and Rehabilitation has given us more thorough and precise knowledge of the talent and facilities in our field, enabling us to identify with greater accuracy than ever before the centers that would provide productive sites for new programs in the future. Dr. Paul M. Ellwood, Jr., my good friend and colleague and former associate at the American Rehabilitation Foundation, where he is now executive director, is at my side today. Dr. Ellwood will later take up the Commission study at further length and discuss its implications for the regional programs. Kenny Rehabilitation Institute, which is sponsored by the American Rehabilitation Foundation, is a component of the RT program centered at the University of Minnesota, one of the first of the RT centers to be established.

In the time at my disposal, it would be impossible to review in detail the progress and achievements of the RT centers. The chairman and other members of the committee may have seen the voluminous reports which are submitted each year to the VRA. They contain ample evidence of the enormous productivity, scientific excellence and creative vitality of these centers.

However, I would like to take brief note of a few conspicuous examples that typify the exciting and promising research undertakings of the RT centers.

At the University of Minnesota, Dr. Frederic J. Kottke, whom the chairman will recall from his past appearances before him, and as one of the original planners of the RT centers, is performing vitally important work on one of the most important and neglected fields of rehabilitation. Dr. Kottke and his associates are devoting extensive study to the deleterious and severely disabling effects of immobilization. Bed rest, generally considered beneficial, is actually one of the most insidious and devastating enemies of the disabled patient. The two most common complications are muscular contractures that twist the body into unnatural, crippling contortions, and decubitus ulcers, bed sores, to use disagreeable but nevertheless familiar term, that destroy large patches of skin, and must frequently be excised by surgery. If unchecked, they produce widespread infection and even death. Kidney dysfunction, caused by the accumulation of calcium deposits, breakdown of the connective tissues that support the joints are other common complications, not to mention the psychic deterioration that is brought on by prolonged inactivity. Dr. Kottke's studies have revealed that these complications set in far more rapidly than was formerly supposed and are demonstrating the benefits of proper bed positioning, exercise, early ambulation and other measures for preventing and alleviating these conditions. The vital significance of these studies can be appreciated when it is noted that Dr. Howard Rusk not long ago reported that his superb staff at the New York Institute of Physical Medicine and Rehabilitation spends one-third of its time correcting complications resulting from inadequate early care—that is the neglect of measures to prevent such problems as muscular contractures and decubitus ulcers. Insurance companies, according to another report, estimate that 25 per cent of the claims they pay for rehabilitation is consumed in treating skin disorders, principally decubiti. One of the monographs published during the past year by Dr. Ellwood's staff at the American Rehabilitation Foundation illustrates the simple, practical measures which counteract the tragic secondary complications of disability: Changing the patient's position in bed at prescribed intervals can check the development of muscular contractures and decubiti: a plywood board placed at the foot of the patient's bed as a brace for his feet can prevent the development of the characteristic deformity associated with stroke—"foot drop"—it is called, which causes the foot on the affected side to become rigidly locked at an unnatural downward angle; the simple expedient of placing a pair of rolled-up washcloths in the hand of a stroke victim can prevent the hand on the affected side from becoming rigidly clenched in a deforming, disabling grip.

Truly, it is shocking that the neglect of such simple, practical, even elementary, patient management routines should be responsible for such widespread suffering and for complications that aggravate the already severe handicaps of a disability victim. This is an example of clinical research of the most basic kind. Through undergraduate education, publication and continuing education, information on these conditions and measures for counteracting them is given widespread distribution and application. The American Rehabilitation Foundation, for example, sends out teams of rehabilitation educators who demonstrate these techniques in hospitals, nursing homes, mental institutions and schools of nursing. These and other programs directed at these problems are made possible by

the RT program. The prospect of reducing the period of rehabilitation by one-third and the costs of rehabilitation by 25 per cent, simply by preventing secondary complications, over and above the obvious humane goals, in itself provides ample justification for manifold increases in the appropriations for rehabilitation research and training. These vital programs must not be curtailed. They must be intensified. The potential savings that could be realized in the Medicare program by reducing the waste of time, money and resources spent in correcting these unnecessary complications, would alone return a greater dollar benefits than an appropriation many times larger than the sum we are discussing.

At Baylor University, Dr. William A. Spencer is devoting intensive study to the organization and delivery of rehabilitation services. Disability is a complex, multi-faceted problem, with emotional, social, vocational and educational consequences. Dealing with them requires an intricate array of scientific disciplines, interaction among many agencies, institutions and other elements of society. At Baylor, Dr. Spencer and his colleagues are utilizing the electronic computer for storing, analyzing and correlating the staggering amount of data relating to all of these components of the disabled patient's history. By this means decisions and courses of action can be made with greater precision and speed. The intricate combinations of elements that associated with cases with successful outcomes can also be reconstructed to provide models for new patterns of care and counseling. The success of such efforts to predict probable success and recognize the factors responsible for it can yield great rewards in dollar savings as well as in human values.

In our program at Temple, we are concentrating increasing attention on biomedical engineering. In collaboration with Philco Corporation, we are developing a prosthetic arm, capable of performing the intricate maneuvers of its human counterpart. It is designed to operate in response to myoelectric impulses, the electric currents generated in the neuromuscular system, which are converted into signals for controlling the artificial arm.

Dr. Rusk and his associates in New York are conducting diversified studies into many disabling conditions, including highly significant projects related to emphysema, a cause of disability that is increasing at an alarming rate.

One of the most promising efforts to predict the uncertain outcome of stroke rehabilitation is being carried on by Dr. Norman Bourestom, a member of Dr. Ellwood's staff at the Kenny Rehabilitation Institute. Careful analysis of a multiplicity of factors—age, perceptual losses, psychological status, personality traits, together with the usual measurements of blood pressure and heart function—are analyzed and correlated in Dr. Bourestom's stroke predictor studies. The ability to recognize the factors that indicate probable success will help restore victims of stroke who might otherwise be considered "hopeless" and on the other hand help prevent the disappointed hopes and waste of personal and medical resources that results when long months are spent in unavailing efforts to rehabilitate the stroke victim who has no potential for making a comeback.

The foundation has also developed a numerical self-care status rating system that may well become a standard instrument of rehabilitation medicine. Traditionally, the evaluation of a patient's status, his progress, or regression, has been based upon imprecise subjective observations. The Kenny Institute system utilizes a multiphasic scale, assigning a numerical value to varying levels of performance of self-care functions. This provides an objective and consistent means of determining the level of function a patient has attained and checking on his success in maintaining the gains he has made.

The self-care rating scale is the subject of a two-part article published recently in the journal of the American Hospital Association. The editors recognize that objective criteria for measuring the quality and effectiveness of medical care is critically needed, not only in rehabilitation, but in all phases of health service. The development of such criteria, based on experience with the most complex and difficult form of patient management, the care of the chronically disabled, can be applied to patients in all categories. Lengthy hospital stays are one of the chief contributing factors to rising medical costs. Utilization review requirements are one of the chief sources of tension and dissension in the MEDICARE program. The problem lies in making objective determinations of the point when patients are ready to be discharged. Use of the numerical rating system will help solve this problem by providing precise, consistent and mutually understandable data on the patient's self-care status. This is another example of how research in rehabilitation medicine can effect direct dollar savings and produce tools of value to all of medicine.

I have touched briefly on only a few of the projects that exemplify the research underway in the regional research and training centers. These and scores of other investigations are continuing studies. Rehabilitation medicine is not going to achieve any spectacular "breakthroughs" or proclaim victories over this or that dread killer orcrippler. The problems we are studying do not yield to breakthroughs. They require follow-through—steady, unremitting exertions to improve the quality, coordination and efficiency of a bewilderingly complex form of management. Hence, research in rehabilitation medicine must be pursued continuously and uninterrupted. Research must be expanded and expanded rapidly, for we are fighting against time. Rehabilitation is a new branch of medical science, which assumed the rank of a distinct specialty only 20 years ago. During this brief period, we have worked with feverish intensity to recruit and train the doctors, nurses, therapists, social workers, psychologists, vocational counselors, and other specialists who are essential to comprehensive rehabilitation; we have pressed forward with research with the limited means at our disposal, attempting to achieve results that had never been achieved before, taking on challenges that others dismissed as futile, unrewarding too difficult, time-consuming and disagreeable; formulating a body of knowledge and promulgating a humanitarian doctrine based on a determination to do something for a segment of humanity that had been rejected, despised and neglected during all the preceding centuries.

Today, Vocational Rehabilitation Administration programs are returning hundreds of thousands of disabled persons to work each year. It has been pointed out that rehabilitation is perhaps the only health field which can draw up a balance sheet and point to a profitable return on every dollar invested in it. I frankly hesitate to resort to the economics of rehabilitation in defense of these programs. What other branch of medicine is asked to justify its claims on the concern and responsibility of Government by pleading the economic benefits of its scientific mission? Nevertheless, it should be borne in mind that a distinctive feature of the regional research and training programs is their direct affiliation with clinical programs providing rehabilitation services to many hundreds of patients. A high proportion of the projects made possible by these programs are devoted to *clinical* research, in which the treatment and restoration of disabled patients is an inseparable part of the research program. The decreased appropriation must be understood therefore as affecting patient services as well as research and education. Rehabilitation is reaching only a small percentage of those who need it. The reduced appropriation will prevent expansion of patient services. Moreover, the success of clinical research is usually in direct ratio to the size and diversity of the patient population. Large representative numbers of patients are essential. The limitation of these programs will therefore hinder both patient care and research and education.

I said in my opening remarks that the establishing of these regional programs was greeted as a momentous turning point in the history of rehabilitation medicine. I said that it imbued the entire field with new hope and elevated its morale. A moment ago, I also said that rehabilitation is fighting against time. While still engaged in the struggle for adequate manpower, financial support and facilities, we are faced with the responsibility of combatting chronic disability that has reached epidemic proportions. Had we virtually unlimited funds, it would be questionable whether we would even begin to fulfill the needs that exist in a reasonable time. The cut-back in this appropriation will halt the momentum we have gained. It will represent a set-back, that in addition to its inhibiting effects on programs, will impair the morale and hopes of the small band of physicians who are desperately seeking to rescue millions of silent and unseen victims of catastrophic illnesses and injuries from their helplessness and isolation. We are not asking too much; we are asking too little.

I feel sure that the chairman, out of his deep compassion for the ill and afflicted and his abiding interest in the future of the far-seeing program that he originally brought into being, will exercise all of his influence to restore the appropriation for research and training to at least its original level.

Thank you.

REGIONAL RESEARCH AND TRAINING CENTERS

Dr. KRUSEN. I will extract from it, sir, if I may. I would say that it is very nice to be here as I enter my 70th year today to celebrate.

Senator HILL. All right, This is your 70th birthday, sir?

Dr. KRUSEN. No; this is my 69th birthday.

Senator HILL. Well, I congratulate you, sir, and hope you will have many, many more.

Dr. KRUSEN. Thank you, sir.

Senator HILL. I think we are very fortunate to have you here, sir, very fortunate.

Dr. KRUSEN. My purpose in appearing before you, Senator, is to appeal to you in defense of a program with which you are intimately familiar. I refer, of course, to the regional research and training centers, which are sponsored by the Vocational Rehabilitation Administration.

You were the chief architect and leading proponent of the legislation that made these programs possible, an achievement that marked a momentous turning point in the history of rehabilitation medicine.

REHABILITATION TRAINING

The creation of these centers has produced effects that have gone far beyond the appropriation of funds. It has infused the entire field of rehabilitation with new hope, and one of the things that we must do is train persons in rehabilitation, particularly in this time of war, so that we will have qualified personnel both medical and ancillary to handle the rehabilitation of the seriously disabled not only in civilian life but also the war wounded.

As you know, our mutual friend, Howard Rusk, when he visited Vietnam, found that there was a large number of lower extremity amputees, and our rehabilitation centers are going to have to deal, and are dealing with this problem now.

Senator HILL. Surely.

PROTOTYPE OF REGIONAL CENTERS

Dr. KRUSEN. It gave encouragement and raised the morale of a branch of medical science that is struggling against heavy orders to meet an enormous burden of responsibility and fulfill the needs of great magnitude.

When you and your committee established these regional research and training centers, which back in 1960 became the prototype of regional centers such as have been mentioned today, and such as were developed under the heart disease, cancer, and stroke program, so actually, this field was the one in which this prototype of the regional center was established.

Moreover, this program has embodied a concept of exceptional vision and far-reaching value. In making this program possible, Senator Hill, you have created this prototype now advisable in the regional medical programs of heart disease, cancer, and stroke, and in fact, in their report, the President's Commission referred explicitly to these VRA centers for research and training as examples of the proposed regional medical programs.

Senator HILL. They did, they used them as an example.

TRIBUTE TO CONGRESSMAN JOHN FOGARTY

Dr. KRUSEN. And these were originally started by you, sir, in 1960. It is deeply disturbing to us in the American Rehabilitation Founda-

tion, and I am certain to you, sir, too, that the regional research and training programs in rehabilitation now stand in jeopardy, and I can't omit paying tribute to the late Congressman John Fogarty, another steadfast and dedicated friend of health and medicine, who took up the original legislation in the House, just as you did, sir, in the Senate, and worked for its passage with great vigor and personal conviction.

Senator HILL. I will certainly join you, sir, in your tribute to John Fogarty, and say to you that his death is a tragic loss, tremendous.

Dr. KRUSEN. A tragic loss. The reduction, then, in the Vocational Administration-budgeted appropriations for its entire program of research and training would have grave consequences.

VOCATIONAL REHABILITATION AMENDMENT ACT OF 1967

I refer, sir, to your bill S. 1618, which is the Vocational Rehabilitation Amendment Act of 1967, and it is to this that I address my contention.

Senator HILL. All right, sir.

HOUSE REDUCTION

Dr. KRUSEN. And one thing that has deeply concerned our American Rehabilitation Foundation, Dr. Ellwood and myself representing this group, is the fact that the appropriation for the VRA budget, as requested by the Administration and the President, and by the Bureau of the Budget, of a \$6 million increase for research and training, was cut back by approximately \$3 million in the House version as passed.

The budget, including this increase, was approved, as I have said, by the administration, and yet it was cut back. This will mean a cut of \$1½ million in the allocations to these very important regional centers which are tremendously effective in rehabilitation of the handicapped, in training personnel, and in providing services and developing new methods of treatment.

In sponsoring this original legislation and supporting it, sir, you made it evident that you envisioned a vital, dynamic, and growing program, and the fundamental concept embodied was a prototype to development of momentum for expansion within the existing new programs and to provide a pattern for additional programs elsewhere.

MEDICAL REHABILITATION DEMAND

You and Miss Mary Switzer have exerted valiant efforts to increase support of medical rehabilitation within the statutory limitations of the Vocational Rehabilitation Acts, and it must be recognized that the support received is pitifully inadequate to the scale and compelling urgencies of the problems of disability as we face them at this stage. As you know, the numbers of persons being rehabilitated each year increased by thousands and thousands, and last year, it was 150,000 who were rehabilitated under this State-Federal program.

RESEARCH

Research, we feel, is essential and the type of research that we do is not that that is done in the categorical studies related to such diseases as cardiovascular disease, neurologic and metabolic disorders, but the type of research that we have done has largely been in the management, in special techniques of the dealing with the seriously handicapped, which is essential to the adequate rehabilitation of these people.

REHABILITATION BIOMEDICAL ENGINEERING

One of the most important things, sir, that I think we have developed recently is the field of rehabilitation biomedical engineering. And at our center at Temple, we are just starting the construction right within the rehabilitation hospital of a large biomedical engineering laboratory.

MYOELECTRIC ARM DEVELOPMENT

We have already developed a myoelectric arm which offers new methods of use of a prosthesis which, maybe, are far superior than anything that we have had previously.

Senator HILL. Than anything in the past?

Dr. KRUSEN. Yes, sir; we magnify small electrical signals from the motor points on the muscles of the arm. These are put through a computer—it is about the size of a cigarette package—and transmitted to a prosthesis or artificial hand which can be controlled with the patient's own muscles of his own upper arm.

Dr. Ellwood can tell you of the outstanding work of the new commission on education in the field of physical medicine and rehabilitation, and the great accomplishments that have been achieved by the training groups in these research and training centers now supported through the grants made by your committee, sir.

UNIVERSITY MEDICAL CENTER RESEARCH

I have in this testimony, but shan't read, examples of the types of fine research being done at these universities medical centers throughout the Nation.

HOSPITAL STAYS

In closing my oral statement, I wanted to point out that lengthy hospital stays are one of the chief contributing factors to rising medical costs, and studies that we are making indicate that by proper development of adequate rehabilitation facilities, the length of stay of the patient under rehabilitation can be markedly diminished.

This is another example of how research in this field can effect direct dollar savings, and produce tools in the field of medicine.

REHABILITATION MEDICINE RESEARCH

We think, then, that research in rehabilitation medicine must be pursued continuously and uninterruptedly, that it must be expanded and expanded rapidly, for we are fighting against time.

This field of rehabilitation medicine is a new branch of medical science which assumed the rank of a distinct specialty about 20 years

ago, and during this brief period, we have worked with feverish intensity to recruit and train doctors, nurses, therapists, social workers, psychologists, vocational counselors, and other specialists who are essential to comprehensive rehabilitation, and we have pressed forward with research, with the limited means at our disposal, attempting to achieve results which had never been achieved before. Testimony today has mentioned the need for training of physical therapists and other workers; in our new center, that we have just established at Temple, there was a need, those representing the American Tuberculosis Association said, for more physical therapists.

EMPHYSEMA

We hoped a new school in this new center this fall. The discussion was directed toward this serious problem of emphysema.

Senator HILL. You have a whole team working on that now?

Dr. KRUSEN. Yes, sir; there is one segment of the rehabilitation center which is dealing with rehabilitation of the person having emphysema.

I frankly hesitate to resort to commission of rehabilitation in defense of these programs. What other branch of medicine is asked to justify its claims on the concern and responsibility of Government by pleading the economic benefits of its scientific mission? It is the human values which are far more important, in my opinion, than the monetary values.

CLINICAL PROGRAMS

Nevertheless, it should be borne in mind that a distinctive feature of these regional research and training programs is their direct affiliation with clinical programs, providing rehabilitation services to many hundreds and thousands of patients.

To conclude, then, the limitation of these programs would hinder both patient care and research and education. I said as I opened my remarks that the establishment of these regional programs was greeted as a momentous turning point in the history of rehabilitation medicine.

CHRONIC DISABILITY

I said that it imbued the entire field with new hope and elevated its morale. A moment ago I also said that rehabilitation is fighting against time. While still engaged in the struggle for adequate manpower, financial support, and facilities, we are faced with responsibility of combating chronic disability that has reached epidemic proportion—one might use this term. That had we virtually unlimited funds, it would be questionable whether we could even begin to fulfill the needs that exist in a reasonable time.

A cutback in this appropriation would halt the momentum we have gained. It would represent a setback that in addition to its inhibiting effects on programs would impair the morale and hopes of the devoted group of physicians who are desperately seeking to rescue millions of silent and unseen victims of catastrophic illnesses and injuries from their helplessness and isolation.

RESTORATION REQUEST

We are not asking too much. We are asking too little, and my real hope is that we could ask for \$4 million more than the Government has asked for, which would be an increase of some \$7 million over what was appropriated in the House version.

I feel certain, Mr. Chairman, that out of your deep compassion for the ill and the afflicted, and your abiding interest in the future of the farseeing program that you originally brought into being, you will exercise all of your influence to restore the appropriation for research and training, at least to its original level, and I would hope more. I would like to ask—

Senator HILL. You realize I have some rehabilitation problem to work on myself; don't you?

Dr. KRUSEN. Yes; I have a few of my own, too.

Senator HILL. All right, Dr. Ellwood.

Dr. ELLWOOD. I am grateful for this privilege of once again appearing before you, Senator, and along with Dr. Krusen, would like to express my high regard for the chairman's unparalleled record of service to health and science of medicine.

PERSONAL REHABILITATION EXPERIENCE

Before I begin talking about rehabilitation, I can't help but want to hitchhike a little bit on Dr. Howard's testimony. Senator Hill, summer before last, I found myself lying by the side of a mountain road, after having rolled a jeep over a cliff, and I had to supervise my own rescue, and I had to do it, one, because of the quality of help that arrived at the scene, and, two, because of the inferior communication systems that we have.

I felt certain that I had a broken back, and in being in the field of rehabilitation, I knew how many of my patients had broken backs like this, lying beside the road, and came in paralyzed because they were inappropriately moved, lying by the road.

Well, 2 hours after I was lying there, the ambulance arrived. And this man—

Senator HILL. It took 2 hours to get there?

Dr. ELLWOOD. Right. And this man who came ran the funeral parlor in the town, and the furniture store, and also—

Senator HILL. You didn't know which one you were going to.

Dr. ELLWOOD. Well, he kept telling me that the last one from Minneapolis that he had found like this beside the road, he was able to take to the funeral parlor instead of to the hospital.

But, at any rate, the first thing he did was to lift my legs straight up into the air, which is the worst thing that you can do for someone with a broken back, so I finally said, "All right, stop, I am going to take charge of my rescue here. You get some people to help you lift me into this stretcher, in the proper way," and instructed him how to do it, and I instructed passers-by to phone doctors in Denver to tell them what my blood type was, and what I thought I had wrong with me, and so forth.

MEDICAL SERVICES TRAINING

At any rate, it was a dramatic example of the problem that Dr. Howard was referring to, and I would strongly urge you to do as he

suggested, that we give much greater emphasis to appropriations for the training of ambulance drivers and personnel, much greater training to the general public, because I suspect many people find themselves in the same position that I was in, of actually being responsible for their own care at the side of the road.

VEHICULAR IMPROVEMENT

That we improve the vehicles that we carry people to the hospital in. This was an old truck that I went in, and finally, that we improve our communication systems.

EFFECT OF HOUSE REDUCTION

On the subject of rehabilitation, I couldn't help but be struck as I listened here today to the number of individuals that are coming to you with the same kind of story about the gravity of the cutbacks that these programs are experiencing. The latest issue of a widely read medical periodical contains an interesting headline. It says "The Future of Research Hinges on Senator Hill." And this is a succinct summary of the spirit that we come to you today.

It is no exaggeration to say that the action of the chairman and his committee on this issue could decide the fate of rehabilitation research, education, and practice.

The House cut in the requested increase in the appropriation for research and training will most certainly halt the momentum of research and education in the regional centers. Coming at this particular time when rehabilitation medicine is at a crucial stage in its struggle to secure a foothold, it could inflict lasting and perhaps irreparable damage.

PERSONNEL SHORTAGES

In previous appearances, we have repeatedly called attention to the acute shortages of medical and paramedical personnel in rehabilitation. We have described the disadvantageous position of rehabilitation in most of the Nation's medical schools, the lack of teaching talent, the insufficient time devoted to this subject in the medical school curriculum.

In these earlier presentations, we have spoken of these problems in general terms. Today I am prepared to present specific facts and findings that will give you a detailed picture of true gravity of these problems.

This documentation should make it perfectly clear that rehabilitation medicine stands in such a precarious position that the decision on the RT programs could well decide its future direction.

The basic premise underlying these remarks is a fundamental fact that I am sure is well known and fully understood by the chairman and his colleagues; namely, that the dynamic union of research, education, and clinical programs is an essential condition of success in attracting students to a specialty and enhancing the quality of teaching and the cultivation of a distinguished corps of teaching personnel.

Bernard Baruch reduced the problem to its essentials when he told Dr. Krusen many years ago that the key to the future of rehabilitation was simply this:

"We must teach teachers to teach."

STATUS OF REHABILITATION IN MEDICAL SCHOOLS

What is the status of rehabilitation in today's medical schools?

We have just completed a study of all of the medical schools, or at least 87 of the 89. This was conducted by a commission which contained representatives of the principal organizations in rehabilitation, and I would like to quote to you some of the findings of this study, particularly those contained in the 57 of the 59 teaching programs directed by specialists in rehabilitation medicine.

Incidentally, this study was sponsored by the Vocational Rehabilitation Administration. I have reported these same findings earlier to an American Medical Association committee.

There are right now a total of 500 additional staff members that are needed by 57 teaching programs. In other words, each of these programs has an average of about nine teaching vacancies. The largest number of vacancies, 89 of them, or about two per school, exist because of shortage of specialists in rehabilitation medicine, and from this, we can infer that fully two-thirds of the Nation's teaching programs offer inferior instruction, as a result of this shortage.

Now this shortage is pure and simple, because there isn't anyone to choose from. I am sure that these other gentlemen here in the room from the field of medical education know what it is like to search for a professor of medicine. You go through a list of a couple of hundred candidates. In rehabilitation, there are no candidates. There simply are not the individuals available to fill these vacancies.

Of the 52 department heads that we interviewed, 48 said that in seeking to recruit teachers they considered extremely difficult or almost impossible to secure the needed personnel in the foreseeable future. Now, owing to this shortage of personnel, 50 percent of the physicians in the field of rehabilitation spend 40 percent of their time teaching.

Now, in field has this many individuals who are effective teachers. The rest of the time, they spend meeting the demands of excessively heavy clinical loads and research loads.

DEARTH OF MEDICAL STUDENT EXPOSURE TO REHABILITATION

Now, obviously, such demands imperil the quality of the teaching, and the commission has further documented the fact that medical students are exposed to very little rehabilitation. Our study revealed, for instance, that less than half of the medical students have the experience of learning about the management of a single rehabilitation case.

Rehabilitation needs extend to about 25 percent of the population. Senator HILL. Twenty-five percent?

Dr. ELLWOOD. Right. Now, the time that is devoted to rehabilitation in the average medical school curriculum can be broken down into three groups; 19 of the programs we found, or about a third of them, which were rated high in terms of quality, spent an average of 69 hours teaching medical students about rehabilitation during the 4 years of medical school.

The 19 lowest programs spent an average of 12 hours teaching about rehabilitation to medical students.

Now, if you can recall from college what 12 hours of instruction taught you about something, you can see how little emphasis we are able to give to this.

However, the time allocated to teaching seems to be a less critical issue than the faculty time available for utilizing the assigned hours.

A typical professor's comment was, "My problem is how many hours I can spend with students, not how many hours they can spend with me."

REHABILITATION ENTRY RATES

Now, the entry rates into the field of rehabilitation remain at a consistently low level. For the past 15 years, the number of physicians entering the field has remained almost constant, unrelated to the growing social problem posed by the mounting need for rehabilitation.

It was found that most individuals in this field migrate to it from some other field of medicine. Only 23 percent of them come into it right out of medical school. Six percent of them leave general practice or some other specialty to take up the practice of rehabilitation medicine, and this practice has persisted for many years.

REHABILITATION MEDICINE

The commission report suggests that rehabilitation medicine doesn't really exist as a genuine alternative for medical students, since so few of them have any knowledge of its real existence. Apparently, it is not until they get out into practice and begin encountering the problems of chronic illness and disability that they become interested in this field. The choice of the field continues to be governed right now largely by the immense number of specialists already engaged in the field, teaching in medical schools, rather than by need.

From these findings, it is clear that the present status of rehabilitation medicine, unless dramatically altered, offers little hope of increasing its capacity to meet the mounting problems of chronic disability.

And second, that we are—I would like to point out, though, that we are better equipped than we ever were before, to wage our attack on these problems at very specific targets.

REGIONAL RESEARCH AND TRAINING CENTER SCHOOLS

The commission study has given us the most complete evaluation of the strengths and weaknesses of this field, and above all, it has demonstrated that the major strengths we possess are to be found in the schools with these regional research and training centers. These eminent departments offer the greatest potential for producing the distinguished teachers and expanding the research basis that is essential to fulfilling rehabilitation needs.

And these centers and others to be established in the future represent the central power source from which future progress will emanate.

PERSONNEL RECRUITMENT

We feel that the most effective means of recruitment is not widespread promotion, but the operation of dynamic research programs and the cultivation of an elite corps of superlative teachers.

It appears that the great advances in teaching and practice in medicine has originated in specific geographical centers. Places like Johns Hopkins and the Mayo Institutions, to cite some notable examples, have seeded the medical schools of this Nation with the flourishing talents which have spread their influence far and wide.

Now we have the beginnings of these centers of this kind of excellence in the field of rehabilitation, and it is our recommendation that you, Senator Hill, continue to assure the support of these centers.

Miss Switzer accomplishes wonders in supporting and stimulating diverse and numerous varieties of programs and projects, but she would be first to agree that medical research and rehabilitation is not receiving adequate support. It has got to be recognized that the VRA, in addition to its vocationally oriented programs, represents the major source of funds for medical rehabilitation, unrelated to vocational goals.

MEDICARE PROGRAM SERVICES DEMAND

We have experienced a fantastic demand increase of services with the medicare program.

If we are to live up to the expectations that the American public has for rehabilitation services, somehow we are going to have to find the teachers and find the means of producing the manpower.

CONSTRUCTION AND RESEARCH AND TRAINING

The appropriation for construction, interestingly enough, in the VRA budget, was doubled from \$5 million to \$10 million, while the increased research and training appropriation was cut in half. Now, this construction allocation is undeniably necessary, and I am pleased it was increased, but at the same time we have got to fill these buildings with brains and stimulation of trained minds to carry out—

Senator HILL. The buildings can't do the job without the brains, can they?

Dr. ELLWOOD. I should say not, and considering the magnitude of the problems that I have outlined, I frankly don't feel that it would be reasonable or responsible to merely petition for a restoration of this original appropriation. I have seen the budgets of these various schools. They are in a position to increase, and to do an increasingly effective job, and I respectfully request that the chairman consider an increase in the research and training appropriation that would add \$4 million to the original administration proposal, and that this sum be specifically allocated for the research and training centers, for these centers of excellence, thus providing an increase of \$7 million for these programs, from the total increase in the appropriation of \$10 million.

I am very grateful to you for this opportunity for Dr. Krusen to appear before you, Senator Hill.

Senator HILL. Well, we deeply appreciate your being here, sir. Senator, have you got any questions?

Senator COTTON. No questions, Mr. Chairman.

Senator HILL. Well, Dr. Krusen, you have been here with us a good many times. You always provide us very compelling testimony. We are delighted that you brought Dr. Ellwood here with you today. We certainly appreciate your testimony, both of you.

Dr. KRUSEN. It is always a privilege and a pleasure.

Senator HILL. We hope you will celebrate many more birthdays here with us, because you are most helpful.

Dr. KRUSEN. It is a privilege and pleasure to be here, sir.

Senator HILL. Thank you both very much.

(The prepared statement of Dr. Ellwood follows:)

Mr. Chairman, I am grateful for the privilege of once again appearing before this body today and join Dr. Krusen in expressing my high regard for the chairman's unparalleled record of service to health and the science of medicine.

I was struck by the opening paragraph in a news report that appears in the latest issue of a widely-read medical periodical. "Medical researchers are looking toward Senator Lister Hill . . . as the one person who can now restore momentum to the nation's government and medical school laboratories." The headline introducing the article proclaimed: "The Future of Research Hinges on Senator Hill", a succinct summary of the spirit in which we come before you today.

It is no exaggeration to say that the action of the chairman and his committee colleagues on this issue could decide the fate of rehabilitation research, education and practice.

The cut in the requested increase in the appropriation for research and training will most certainly halt the momentum of research and education in the regional centers. Coming at this particular time when rehabilitation medicine is at a crucial stage in its struggle to secure a foothold, it could inflict lasting and perhaps irreparable damage.

In previous appearances, we have repeatedly called attention to the acute shortages of medical and paramedical personnel in rehabilitation. We have described the disadvantageous position of rehabilitation in most of the nation's medical schools, the lack of teaching talent, the insufficient time devoted to this subject in the medical school curriculum.

In these earlier presentations, we have spoken of these problems in general terms. Today, I am prepared to present specific facts and findings that will give you a detailed picture of true gravity of these problems. This documentation should make it perfectly clear that rehabilitation medicine stands in such a precarious position that the decision on the RT programs could well decide its future direction.

The basic premise underlying these remarks is a fundamental fact that I am sure is well known and fully understood by the chairman and his colleagues—namely that the dynamic union of research, education and clinical programs is an essential condition of success in attracting students to a specialty and enhancing the quality of teaching and the cultivation of a distinguished corps of teaching personnel.

Bernard Baruch reduced the problem to its essentials when he told Dr. Krusen many years ago that the key to the future of rehabilitation was simply that: "We must teach teachers to teach."

What is the status of rehabilitation in today's medical schools?

The answers are to be found in the report to the Commission on Education in Physical Medicine and Rehabilitation, a four-year study carried out by the American Rehabilitation Foundation educational research unit. The Commission is composed of representatives of the American Board of Physical Medicine & Rehabilitation, The American Academy of Physical Medicine & Rehabilitation, and the American Congress of Physical Medicine & Rehabilitation. The study encompassed the teaching of rehabilitation medicine in 87 of the 89 medical schools in the United States. Its findings were based on information obtained from 57 of the 59 teaching programs directed by specialists in rehabilitation medicine. The study was sponsored by the VRA.

Here are some of the findings as I reported them earlier to the AMA Committee on Rehabilitation Education. A total of 500 additional staff members are needed by the 57 teaching programs. The largest number of vacancies (89) exist because of the shortage of specialists in rehabilitation medicine. It is inferred that fully two-thirds of the nation's teaching programs offer inferior instruction as the result of this shortage.

The prospects for filling these vacancies is decidedly discouraging. Forty-eight of the 52 department heads seeking to recruit teachers consider it extremely difficult or almost impossible to secure needed personnel in the foreseeable future.

Owing to the shortage of teaching personnel, 50 per cent of the physicians engaged in the practice of physical medicine spend 40 per cent of their time

teaching, while spending the balance of their time meeting the demands of excessively heavy clinical work loads and in research. Obviously, such heavy demands imperil the quality of their teaching, clinical and research duties.

The Commission also documented the fact that the time devoted to teaching rehabilitation medicine is severely limited.

The Commission's study revealed that less than half the students have the experience of learning about the management of a rehabilitation case. Teaching time in rehabilitation is severely limited throughout the undergraduate years. In 19 programs rated high in terms of quality, an average of 69 hours of curriculum time was devoted to rehabilitation medicine over the course of four years. At the same time 19 schools devoted an average of only 12 hours to rehabilitation in four years. However, the time allocated to teaching rehabilitation seems to be a less critical issue than the faculty time available for utilizing the assigned hours. A typical professor's comment: "My problem is how many hours I can spend with students, not how many hours they can spend with me."

The inevitable financial problem manifested itself in the study, but was far less dominant than the manpower shortage. The estimated cost of an adequate teaching program in rehabilitation is \$150,000 per year for teaching staff alone. Yet an average of only \$25,000 is available for support of rehabilitation teaching programs.

There are fewer than 600 certified physiatrists in the United States today, and a total of approximately 1,000 physicians engaged in the practice of physical medicine and rehabilitation.

The demand for services, intensified by Medicare, will reach a level which by 1975, predicated on the most conservative estimate, that will require the services of more than 3,000 physiatrists, and more than double that number if need is computed on the basis of the higher estimates.

The entry rate into the field of rehabilitation remains at a consistently low level. For the past 15 years, the number of physicians entering the field has remained almost constant, unrelated to the growing social problem posed by the mounting need for rehabilitation. It was found that most physiatrists migrate to this specialty from some other area of medical practice. Few (23%) enter the specialty directly from medical school; the majority (76%) leave general practice or another specialty to take up the practice of rehabilitation medicine. This pattern has persisted over the years. From 1950 on, the percentage entering the field directly from medical school has remained at about the same level as in prior years, unaffected by the steep rise in chronic illness and disability during this period. The Commission report suggests that rehabilitation medicine does not exist as a genuine alternative for medical students, since so few of them have any knowledge of its existence.

Apparently, it is not until they encounter the problems of chronic illness and disability in practice that they become interested in the specialty. The choice of a specialty continues to be governed largely by its eminence and the number of specialists already engaged in the field, rather than by need.

The Commission study has also given us a more definite picture of the personality traits and interests of those who are attracted to rehabilitation medicine. They are a special type, with motivations and interests that differ sharply from those of physicians in other fields. A high percentage of the clinicians entering rehabilitation in recent years display interests coinciding more closely with social welfare or personal relations than members of other medical specialties. These findings will enable us to identify more accurately students who are promising candidates for our field.

From these findings, it is clear that: (1) the present status of rehabilitation medicine, unless dramatically altered, offers little hope of increasing its capacity to meet the mounting problem of chronic disability, and (2) we are nevertheless better equipped than ever before to aim our attack on these problems at specific targets. The Commission study has given us the most complete evaluation of the strengths and weaknesses of our field that has hitherto been available. Above all, it has demonstrated that the major strengths we possess are to be found in the schools where the regional research and training programs are centered. These eminent departments offer the greatest potential for producing the distinguished teachers and the expanding research base that are essential to the rapid fulfillment of rehabilitation needs. These centers and others to be established in the future represent the central power source from which future progress will emanate.

The most effective means of recruitment is not widespread promotion, but the operation of dynamic research programs and the cultivation of an elite corps

of superlative teachers. The great advances in the teaching and practice of medicine have originated in specific geographical centers. Such centers as Johns Hopkins and the Mayo institutions, to cite the most notable examples, have seeded the medical schools of the nation with flourishing talents which have spread their influence far and wide and enhanced the quality of all phases of medical care. These and other prolific programs were rooted in the soil of vital and fruitful research programs.

It is this nourishment that rehabilitation must have to achieve its goals. At the present time, it is struggling to survive. Yet in the RT programs we have begun to cultivate the most productive areas of rehabilitation medicine. By its action the committee will in a very real sense be deciding the future of rehabilitation medicine and deciding whether or not the needs of the disabled are to be fulfilled.

Disability is the only health problem which is increasing at a greater rate than other categories of illness. The committee is faced with the decision of whether rehabilitation will be able to exert the heroic efforts that will be required to achieve some degree of balance between the facilities for acute care and chronic care.

Rehabilitation medicine is already far behind in its capacity to meet the needs of long term disability. We cannot afford to fall farther behind, as we will if the decrease in VRA research and training appropriations is allowed to stand.

I was glad that Dr. Krusen emphasized that rehabilitation medicine must, in order to fulfill its mission, pursue its own distinctive lines of investigation. Rehabilitation medicine cannot be expected to make do with the spin-off research from some other field. There may also be a tendency to equate the scale of support devoted to rehabilitation medicine with the size of the entire VRA appropriation. Only a small portion of the total budget is allocated to the RT centers, which comprise the major portion of support for research that is intrinsically medical in character.

Miss Switzer accomplishes wonders in supporting and stimulating an extraordinarily diverse and numerous variety of programs and projects, but she would be the first to agree that medical research is not receiving adequate support. It must be recognized that the VRA, in addition to its vocationally-oriented programs, represents the major source of funds for medical rehabilitation unrelated to vocational goals. The demand for services in this category will greatly increase by the MEDICARE program.

I emphatically agree with Dr. Krusen's reluctance to justify medical research solely in terms of economic returns. It is time that rehabilitation medicine came to be recognized as a branch of medicine which must pursue its mission with single-minded devotion to the dictates of good science and good medicine, instead of being thought of as an adjunct to vocational, workmen's compensation, social security and veterans programs. It is a branch of medicine that is dealing with one of the nation's most urgent and most neglected health problems. The regional medical programs on heart disease, cancer and stroke deal largely with the *causes* of heart disease, stroke and cancer. Rehabilitation is dealing with the *consequences* of these and a multitude of other diseases. If the causes justify an attack of the magnitude of the regional medical programs, then the consequences should be considered deserving of proportionate concern and commitments.

It is my understanding that the appropriation for construction contained in the VRA budget was doubled—from \$5 million to \$10 million—while the research and training appropriation was cut in half. The construction allocation is undeniably necessary and I am pleased that it was increased. At the same time, however, the expansion of facilities must be paralleled by research and training if the facilities are to provide adequate services and secure qualified staffs. We need bricks, but also need brains and the stimulation of trained minds that can only be achieved through consistent, reliable and expanding support of research.

Considering the magnitude of the problems I have outlined, I frankly do not feel that it would be reasonable or responsible to merely petition for a restoration of the original appropriation. A substantial increase is clearly necessary. I respectfully request that the chairman consider an increase in the research and training appropriation that would add \$4 million to the original appropriation, and that this sum be specifically allocated for the research and training centers, thus providing an increase of \$7 million for these programs from a total increase in the appropriation of \$10 million.

I am deeply grateful for the patient hearing that has been accorded me, and I earnestly hope that the committee will act favorably on these recommendations.

FUNDS FOR THE VOCATIONAL REHABILITATION ADMINISTRATION

Senator HILL. I shall place the letter to me from Mr. E. B. Whitten, executive director, and his statement in the hearing for the guidance and information of the committee and of the Senate.

(The material referred to follows:)

NATIONAL REHABILITATION ASSOCIATION,
Washington, D.C., June 21, 1967.

HON. LISTER HILL,
U.S. Senate,
Washington, D.C.

DEAR SENATOR HILL: Will you please insert in the record of the Labor-HEW Appropriation hearing the attached statement of the National Rehabilitation Association.

I urge that your personal attention be given to the Selective Service Medical Referral Program referred to in Item 3 of this statement. It is my understanding that this program was initiated in your committee. It is a most promising program. It would be extremely unfortunate, if it was to die through lack of attention at this time. It is my understanding that something must be done by July 1, 1967, or the program in the states will be disrupted.

I know that all the members of your committee are as concerned as you are that this program not be allowed to lapse. We shall appreciate your doing what you can.

With best wishes, I am

Sincerely yours,

E. B. WHITTEN,
Executive Director.

STATEMENT OF NATIONAL REHABILITATION ASSOCIATION

The National Rehabilitation Association is an organization of 27,000 individuals with chapters in all of the states. Its prime concern is the promotion and development of programs for the rehabilitation of the nation's handicapped citizens. It was organized in 1925 and has been in continuous existence since that time. Its headquarters are at 1522 K Street, N.W., Washington, D.C. The Association respectfully submits its viewpoints to the subcommittee with respect to the Labor-HEW Appropriations bill as it relates to rehabilitation items.

1. We sincerely hope the committee will restore the cut made by the House in the Research and Training Appropriations for the Vocational Rehabilitation Administration. As members of this committee know, this research and training program is making a most important contribution to increasing knowledge and training people to apply such knowledge in the rehabilitation of handicapped people. The recommendations of the Administration would have permitted a slow but orderly expansion of this program of research and training. It would be unfortunate, if this orderly development should be set back. These VRA research and training programs are, probably, the best examples of any HEW programs of the bridge that can be built between knowledge and practice.

2. The House made a 50% cut in the increases the Administration had recommended for salaries and expenses in the Vocational Rehabilitation Administration. This action is hard to understand in the light of the numerous new programs and expanded programs which Congress has given the Vocational Rehabilitation Administration to administer under the 1965 legislation. The National Rehabilitation Association is in full agreement with a statement recently issued by the Council of State Administrators of Vocational Rehabilitation bearing on the importance of the Vocational Rehabilitation Administration in assisting the states in developing programs to serve handicapped people. We quote: "Although the direct service program in vocational rehabilitation is conducted by state vocational rehabilitation agencies, the importance of the Vocational Rehabilitation Administration in the program cannot be over-emphasized. A high percentage of the financial support for the state programs comes through the Vocational Rehabilitation Administration, which also provides technical and consultative services to the states. VRA also conducts directly a substantial program of research and demonstration and education and training of vocational rehabilitation personnel. The state vocational rehabilitation agencies call upon VRA for help in almost every aspect of their

programs, and the leadership of VRA has contributed immeasurably to the improvement and expansion of the program. The ability of the VRA to provide this leadership has never been more important than now.

"To provide the leadership and assistance the states expect of it in the years ahead, VRA must have far greater resources than have been made available to it in the past. With present limitations on personnel, there are important areas in which technical and consultative services are almost totally lacking and in other areas personnel is so thinly spread that services cannot be effective. It is unwise economy to starve VRA for staff in this period of great expansion of services."

The National Rehabilitation Association urges this committee to recommend the appropriation of the full amount included in the President's budget. With any lesser amount, the Vocational Rehabilitation Administration will be utterly incapable of carrying out the responsibilities which the states expect of it and, which, we believe this committee will expect of it.

3. The committee is familiar with the Selective Service Medical Referral Program begun two years ago and financed through Economic Opportunity funds, which we understand will not be available for the next fiscal year. In fact, funds for the continuation of this program were not included in the President's budget. It is our understanding, however, that this omission was the result of the fact that a decision had not been made at the time the budget was presented with respect to how the program would be financed for the next year. In other words, we understand that there was no intention that this program be discontinued. Economic Opportunity funds for the administration of this problem were channeled through the Public Health Service, with the states being permitted to decide how the programs would be administered. In about two-thirds of the states, the Public Health Service is administering agency. In one-third of the states, the vocational rehabilitation agency has prime responsibility. In all of the states, the two agencies are working together in an attempt to secure maximum benefits to the country from this program.

Although the program may still be said to be in its infancy, we have had many telephone calls and letters from those administering the program in the states emphasizing that these programs have great promise, much more than were originally anticipated. Many of the handicapped youth rejected for military services are being identified, their problems analyzed, their potentials evaluated, and services begun which will, undoubtedly, result in their becoming employable. In many instances, it is very likely that these same individuals will be accepted for military service at a later date. It would be extremely unfortunate if this promising program should be allowed to die as a result of the failure of Congress to appropriate a small sum of money for its continuation.

We urge you to include in the HEW bill not less than \$5 million earmarked to continue this program. We are not concerned which unit of HEW handles the money. I am sure that this question can be resolved in the Office of the Secretary of HEW. We want to be sure (1) that the money is available, not less than \$5 million; (2) that the money is earmarked for the specific purpose of continuing the Selective Service Medical Referral Program; (3) that state matching is not required to secure the federal funds; and (4) that the states continue their operations as they are now doing, if this is the will of the state.

It is imperative that action be taken on this matter promptly, since funds currently allotted will be expended by June 30, 1967. Note: Although official releases have not been issued, we hear that financing has been arranged for the period July 1-December 31, 1967, after which the program is expected to become a "project" program to be financed by general Public Health Service appropriations. *This seems to me to be a most unsatisfactory solution*, since it will mean that the evaluation of the program will depend upon its successful competition with other program needs. We believe this should be a national program, operating in all Selective Service centers.

STATEMENT OF DR. RUSSELL H. MORGAN, RADIOLOGIST IN CHIEF,
JOHNS HOPKINS HOSPITAL, BALTIMORE, MD.

RADIOLOGY PROGRAM

PREPARED STATEMENT

Senator HILL. Now, Dr. Russell H. Morgan. Doctor, we welcome you back with us.

Dr. MORGAN. Thank you very much, Senator Hill.

Senator HILL. Johns Hopkins University?

Dr. MORGAN. Yes.

Senator HILL. We are happy to have you proceed now.

Dr. MORGAN. Senator Hill, I come today as Chairman of the National Advisory Committee on Radiation. I have a prepared statement, which I have submitted to Mr. Downy.

Senator HILL. All right, we will have this appear in full in the record, sir.

(The statement follows:)

URGENTLY NEEDED PROGRAMS TO INCREASE MANPOWER EFFECTIVENESS AND TO
IMPROVE THE SAFETY OF THE SERVICES PROVIDED THE PUBLIC IN CLINICAL
RADIOLOGY

The National Advisory Committee on Radiation in its recent report, "Protecting and Improving Health Through the Radiological Sciences" provided impressive data to indicate that clinical radiology, because of its enormous growth, faces serious problems in its ability to provide the diagnostic X-ray services needed by the public. Indeed, the demand for these services has become so great that the ability of American medicine and the United States government to provide this essential ingredient of quality health care to many of this nation's citizens is threatened.

As NACOR has pointed out, the basic problem in clinical radiology is professional manpower and the effectiveness with which this manpower is utilized. Currently, the training of additional professional people in all medical disciplines is being aggressively worked upon by the newly created Bureau of Manpower of the Public Health Service. However, it will be many years before any important increases in medical personnel will occur because of the long period needed to train physicians.

In the meantime therefore, it is essential that every effort be expended to increase the effectiveness of present manpower in radiology. The importance of this is not only to prevent a breakdown in the availability of radiological services to the public but to prevent the cost of these services from rising to unacceptable levels.

NACOR has recommended that the newly formed National Center for Radiological Health undertake new programs directed specifically to improve the effectiveness with which x-ray services are provided the sick and to enable these services to be given to all that need them at reasonable cost. To achieve these goals, it sees an immediate need for the following efforts:

- a. Programs to develop more efficient and safer x-ray equipment.
- b. Programs to increase the output of today's radiologists by the application of modern technological developments in the field of information processing and
- c. Programs to improve the accessibility of radiological information to patients' physicians by the development of efficient radiological data and retrieval systems in hospitals. One of the greatest causes of wasted physician time today is the effort spent by physicians in obtaining x-ray information on hospitalized patients because of outgrown and obsolete methods of data storage and retrieval.

To enable the National Center for Radiological Health to undertake these several programs without delay, it is urgently requested that a sum of not less than \$3 million be added to the NCRH budget for the fiscal year beginning July 1, 1967. These funds will permit not only an aggressive attack on the

problems that now interfere with the effective utilization of radiological manpower in the United States but a similar attack on many of the problems which have accelerated the rise in medical costs. The undertaking of these programs is consistent in every respect with the role given to the NCRH by the Surgeon General.

REPORT OF NATIONAL ADVISORY COMMITTEE ON RADIATION

Dr. MORGAN. I would just like to refer to it briefly, as I go along.

The National Advisory Committee on Radiation in its recent report, "Protecting and Improving Health Through the Radiological Sciences," provided impressive data to indicate that clinical radiology, because of its enormous growth, faces serious problems in its ability to provide the diagnostic X-ray services needed by the public. Indeed, the demand for these services has become so great that the ability of American medicine and the U.S. Government to provide this essential ingredient of quality health care to many of this Nation's citizens is threatened.

Parenthetically, in its report, Senator, it was pointed out that the demand for clinical services in the field of radiology, X-ray treatment, X-ray diagnosis, the use of radioisotopes, and so on, has been increasing over the last 20 years at the rate, annual compounded rate in excess of 7 percent, and the manpower to meet the clinical demand of the public has been increasing at only a rate of slightly in excess of 5 percent, and hence over the years, there has been a substantial disparity between clinical demand for service on the one hand and the available manpower on the other.

Now NACOR pointed out that although the basic problem in clinical radiology is professional manpower and the effectiveness with which this manpower is utilized, it must be recognized that the solution of the manpower problem is not easy.

TRAINING OF PROFESSIONAL PEOPLE IN MEDICAL DISCIPLINES

Currently, the training of additional professional people in all medical disciplines is being aggressively worked upon by the newly created Bureau of Health Manpower, Public Health Service. However, it will be many years before any important increases in medical personnel will occur because of the long period needed to train physicians.

Senator HILL. It takes time for training.

Dr. MORGAN. Yes, sir; indeed. The 6-year, 8-year training period, plus additional specialization makes this time period very long indeed.

INCREASED EFFECTIVENESS OF PRESENT CLINICAL RADIOLOGY MANPOWER

In the meantime, therefore, it is essential that every effort be expended to increase the effectiveness of present manpower in the field of clinical radiology.

The importance of this is not only to prevent a breakdown in the availability of radiological services to the public, but to prevent the costs of these services from rising to unacceptable levels.

Now, the National Advisory Committee on Radiation recommended that the newly formed National Center for Radiological Health undertake new programs directed specifically to improve the effectiveness with which X-ray services are provided the sick and to enable these services to be given to all that need them at reasonable cost.

Again, I might say parenthetically, Senator, that NACOR envisaged that ultimately, the cost of these programs in the Public Health Service would be of the order of \$39 million to \$40 million. But that is recognized, as you have so well pointed out here today, that because of the war, it is unrealistic to look for an expansion of this magnitude at the present time.

And hence, what I am talking about today is something to get things started, rather than to achieve the full goal set forth by the National Advisory Committee on Radiation.

Now the said committee sees an immediate need for the following efforts. First, programs to develop more efficient and safer X-ray equipment; second, programs to increase the output of today's radiologists by the application of modern technological development in the field of information processing; and third, programs to improve the accessibility of radiological information to patient's physicians by the development of efficient radiological data and data retrieval systems in hospitals.

I might say that one of the greatest causes of wasted physician time today is the effort spent by physicians in obtaining X-ray information on hospital patients because of outgrown and obsolete methods of data storage and retrieval.

BUDGET REQUEST INCREASE

Now, to enable the National Center for Radiological Health to undertake these several programs without delay, it is urgently requested that a sum of not less than \$3 million be added to the Center's budget for the fiscal year beginning this July. These funds will not only permit an aggressive attack on the problems that now interfere with the effective utilization of radiological manpower in the United States, but a similar attack on many of the problems which have accelerated the rise in medical costs. The undertaking of these programs is consistent in every respect with the role given to the NCRH by the Surgeon General.

LETTER OF SURGEON GENERAL

Now, I might say that these three beginning programs, Senator, I have discussed with Dr. Stewart, the Surgeon General, and in his letter of reply to our discussions of January 27, he indicated that, and I will quote from it:

I have reviewed your letter of December 13, and had subsequent discussions with Dr. Pringle and Mr. Terrell, and all of us agree in principle with your brief summary and your proposals.

Let us now consider several of the more specific items, particularly in the light of actions that can be taken in the immediate future.

And I won't quote from the letter in full, but just in regard to these things which I am discussing here with you today.

DATA PRODUCTION, MANAGEMENT AND INTERPRETATION

He went on to say, and I quote again:

With regard to your specific proposals for data production, management, and interpretation, I understand that these are generally recognized needs, so I have asked the Center to undertake feasibility studies with appropriate advisers, and a sufficient staff, to define the program plans for the development of the new systems that can be undertaken.

Well, the Center has undertaken those feasibility studies in late May, completed them, and it is as a result of these studies that I have written to you and now present this material today.

I think what we are talking about is something which will get underway a series of programs which will increase the effectiveness of our radiological manpower in the year 1967, while we are awaiting manpower to grow to the levels which are more consistent with the demands which medical practice requires.

And this, sir, is the presentation that I would like to make to you.

BUDGET REQUEST HISTORY

Senator HILL. Well, I think the figures show that the Department of HEW reduced the request of the agency by \$1,638,000, and then the Budget Bureau reduced the Department's request by an additional \$1,954,000, which is a total reduction of \$3,592,000.

Dr. MORGAN. Yes, sir; these were in other areas.

Senator HILL. Yes.

Dr. MORGAN. But they were certainly, I think, not consistent with the need to provide increasing effectiveness of the manpower that we have. As you so well pointed out on a number of occasions, the cost of medical care is rising at distressingly high amounts each year, and hence, anything that we can do to improve the effectiveness with which the care is given, I think, is an extremely desirable thing. And it is not too generally well known that the field of radiology being a young discipline, having started only with the discovery of the X-ray, in 1895, has grown to a point where it has a very large impact upon the medical scene today. A study done by the Public Health Service just last year presented this point very well, I think, when it pointed out that on average, 1 out of every 2 people in the United States during the year 1965 had to go to the hospital or to their physician for radiological study, and hence anything that we can do to improve the efficiency with which these services are provided would be extremely worth while.

Senator HILL. Any questions, Senator Cotton?

Senator COTTON. No questions at this point.

Senator HILL. Well, Doctor, you have been with us quite a few times in the past; you always bring us some most helpful testimony, challenging testimony, and we certainly want to thank you.

Dr. MORGAN. Thank you, sir.

Senator HILL. We appreciate it very much indeed. Most happy to have had you here.

FUNDS FOR FEDERAL CONTROL OF PESTS

I shall place in the hearing for the benefit and guidance of the committee and of the Senate a letter which I received from Senator Muskie, of Maine, for the information and guidance of the committee.

(The letter follows:)

U.S. SENATE,
COMMITTEE ON PUBLIC WORKS,
June 28, 1967.

HON. LISTER HILL,
Chairman, Subcommittee on Labor and Health, Education and Welfare Appropriations, Senate Committee on Appropriations, Washington, D.C.

DEAR MR. CHAIRMAN: Earlier this year I was involved with a project in Maine concerning the spraying of DDT over a 100,000 acre area in an effort to eradicate a spruce budworm infestation. In seeking information on the biological effects of DDT on man and his environment, I was appalled at the lack of a central facility where up-to-date data about the biological effects of pesticides could be obtained. I found that there is a great deal of research being carried on in different places by different people, with little or no coordination or exchange of findings. It would seem logical that the overall responsibility for pesticides should be assigned to one Federal agency, the most likely one being the Federal Committee on Pest Control.

It has recently come to my attention that the House, in reducing the budget request of the National Communicable Disease Center of the Public Health Service in H.R. 10196, has restricted the operation of the Federal Committee on Pest Control. I refer specifically to the deletion of two FCPC staff positions budgeted at \$37,000 which were included in the Pesticide Program.

Since it is my opinion that the FCPC should be able to expand its research and evaluation program and should ultimately be given the responsibility for setting Federal policy on the use of pesticides, I feel very strongly that this is not the time for its existing professional staff to be cut. I also understand that the deletion of these two positions will hamper the completion of current FCPC projects and studies.

I urge that the Committee act to restore this modest request for \$37,000 to H.R. 10196.

Sincerely,

EDMUND S. MUSKIE,
U.S. Senator.

FUNDS FOR AIR POLLUTION CONTROL

Senator HILL. I have received a letter from Mr. Thomas L. Kimball, executive director of the National Wildlife Federation, concerning funds for air pollution control.

(The material referred to follows:)

NATIONAL WILDLIFE FEDERATION,
Washington, D.C., June 23, 1967.

HON. LISTER HILL,
Chairman, Subcommittee on Labor and Health, Education, and Welfare, Senate Committee on Appropriations, New Senate Office Building, Washington, D.C.

DEAR MR. CHAIRMAN: The National Wildlife Federation appreciates the invitation to comment upon appropriations for the Department of Health, Education, and Welfare for fiscal 1968 and would welcome having this letter be made a part of the current hearings.

By way of identification, the National Wildlife Federation is a private organization which seeks to attain conservation goals through educational means. The Federation has affiliates in 49 States. These affiliates, in turn, are made up of local groups and individuals who, when combined with associate members and other supporters of the National Wildlife Federation, number an estimated 2,000,000 persons.

Our organization long has been concerned with the widespread dissemination of chemical pesticides, water pollution, and air pollution and this year adopted a resolution naming environmental contamination as the most serious natural resources problem facing the nation at this time. Therefore, we are exceedingly pleased that the House has seen fit to allow \$64,185,000 for air pollution control, an increase of \$24,960,000 over the allowance for fiscal 1967. Unquestionably, the entire program needs acceleration and we are hopeful that the Senate can join the House in providing these funds.

Thank you again for the opportunity of making these observations.

Sincerely,

THOMAS L. KIMBALL,
Executive Director.

**STATEMENT OF ARNOLD B. ELKIND, ATTORNEY AT LAW,
NEW YORK CITY**

VICTIMS OF NEGLIGENT INQUIRIES

Senator HILL. Now, I have a communication from Mr. Arnold B. Elkind, of New York City, saying he has a very urgent engagement in New York.

Mr. ELKIND. Thank you very much, Senator. I very much appreciate your calling me out of order, Senator.

Senator HILL. All right, sir, you may proceed, sir.

Mr. ELKIND. Senator, this is my first experience before your committee and my first experience before you, and I do want to express my appreciation for the courtesy extended to me in permitting me to appear before you, and I think that it is somewhat exceptional that I appear to be the first witness who is a lawyer rather than a doctor testifying here today.

Senator HILL. We lawyers won't hold that against you.

Mr. ELKIND. I hope not.

Senator HILL. Is that right, Senator Cotton?

Senator COTTON. I am not a lawyer. I am just a member of the bar.

Senator HILL. All right, sir, go ahead.

Mr. ELKIND. I am here to testify on behalf of the injury control program of the U.S. Public Health Service, and my name is Arnold Elkind.

I practice in New York City, and I have been practicing since 1939, and during those 27, 28 years that I have been practicing——

Senator HILL. Where did you graduate in law, sir?

Mr. ELKIND. New York University Law School, 1939.

And I have been devoting a very substantial part of my time to the handling of cases in which people have sustained personal injuries, or have died as the result of acts of negligence and carelessness.

Senator HILL. What we called tort cases in the old days?

Mr. ELKIND. Tort cases; yes, sir.

Senator COTTON. I guess I am a lawyer. That's one I remember.

COST TO UNITED STATES

Mr. ELKIND. Well, then, you might recall, Senator, that this you handled those kind of cases, your world becomes peopled, to a certain extent, by these maimed and burned and scarred and disabled victims, who have been disembodied and carved out of the fabric of normal society, and they are assigned to a kind of half life and half death, and as we have already heard here today, many of these people live with daily pain and are so economically stressed that they represent indeed an economic load to this country, as well as a spiritual load to their communities. And the dollar figure that has been talked about and is generally accepted as the cost to this country of these kinds of accidents is the magnitude of \$10 billion per year.

ACCIDENT PREVENTION

So that when I talk in terms of spending money to cut down that figure, I am really not unmindful of the costs of the Vietnam conflict, or the competing interests of the other fine medical groups who have spoken ahead of me.

I want to say at the outset that I will grant that regardless of governmental concern, regardless of the types of warnings, the education, the enlightenment that is supplied to our citizenry, there will always be some small percentage of our Nation who will suffer the consequences of unavoidable accidents, but it seems to me that in this magnificently gifted land, enriched in talent and creative genius and skills, we should and we must have a better understanding of the factors which enter into the destruction of man by his environment from accidental causes. The area of unavoidable accidents can be greatly minimized if we devote the required attention to the problem.

A beginning point logically, is man himself, and the factors that make some individuals accident prone. Can a given individual's ability to exist safely in a complex environment with many risks be scientifically reenforced?

Certainly on a quantitative basis, research into this problem screams for attention. We are told that accidents kill more children up to the age of 15 than all diseases combined, and yet we seem to accept accidents to children as an inevitable price of our culture. As though we still suffer vestigial deference to ancient tribal rites, we seem to have accepted the need to sacrifice a certain demon—accident. We can establish educational regimen for cultivating safe living habits in children, but it should be based on scientific data rather than parent substitute generalities. As evidence of this type of training, I call your attention to the driver education program, and its results in reducing automobile accidents at the teenage level.

CIRCUMSCRIBED BUDGET

Even granting that no answers to the accident phenomenon can be obtained by scientific research, we absolutely must do more than pledge the conscientious and skilled effort which is represented by the circumscribed budget for the injury control program of the Public Health Service.

For 3 years I served as the chairman of the Consumer Protection Committee of the American Trial Lawyers Association, which is made up of about 21,000 lawyers who are involved with the legal problems of injured people and who have associated with one another because of their mutual interest in the legal professional problems of representing injured people. It is second only to the American Bar Association in numbers. In the course of my stewardship of the consumer protection program of the association I enjoyed the opportunity of working with a number of people in the U.S. Public Health Service, particularly several of the distinguished and dedicated servants who devote their energies to the problems of injury control.

SUBSIDIARY CONCERN OF URBAN AND INDUSTRIAL HEALTH INSTITUTE
REMOVAL TO CINCINNATI

I asked for the budgetary estimates of the Public Health Service because I had felt that finally, with all of the hullabaloo about consumer protection, progress was going to be made in this area, and I was surprised to learn, Senator, that the budget for the injury control program was virtually buried as a subsidiary concern of the urban and industrial health institute, and that that urban and health institute is being moved to Cincinnati, and that as a result of that move, a number of skilled personnel in the Department would have to leave.

FUNDING REQUISITE

Now, I think, Senator, that approximately 350 people at the present time could, a minimum of 350 people could be successfully involved in the injury control program in the United States. And that an appropriation of \$10 million would be money well spent for this type of work. The current budgetary estimate doesn't even permit this group to evaluate and even list the accidents and the causes of the accidents that occur in the United States, so that they can be quickly recalled for use by the Senate and by the House.

NONRECOGNITION OF WORK BY MEDICAL DISCIPLINES

Now, I am certain that if the fulcrum on which this question revolved were the number of people involved in accidents, we would have no problem, but I think, Senator, that the reason that we find such a small allotment for the injury control program is that it doesn't come within the ambit of any particular discipline.

The doctor doesn't see it as a problem for the doctor. There is no social engineering science or discipline which recognizes this kind of work.

That the problem does exist is made very evident by a recent survey that CBS conducted, in which they found that after all of the publicity on seat belts that we have been exposed to in this country in the last year or so, less than a third of the people who have seat belts in their car—and they are installed—they just don't use them.

Senator HILL. That is right.

Mr. ELKIND. And that suggests some psychotic risk taking that has to be dealt with in a scientific way. Now, in a related area—I am trying to make this very brief, Senator. I am just hitting the high spots. I do realize that I am imposing on the time of other witnesses, but in a related area, and the one that I have been deeply concerned with, is the problem of product safety in this country. Many people are injured as a result of defective products, and when the attempt is made to speak to the manufacturers about whether warnings should be placed, and whether this should be done or that should be done, the answer that one gets back is that there is no hard evidence, there are no facts, there is no knowledge on which to base a determination that particular conduct should be taken by the manufacturer.

In other words, they question whether or not any results would be accomplished as a result of certain manufacturing suggestions.

PROGRAM ACTIVITIES

Now, the Public Health Service's activities, this injury control program, has been devoting itself to using the formula of learning and alerting the manufacturer. In other words, what they do is they find out about these particular products, and then they go to the manufacturer, to the association representing the manufacturers, and they call their attention to the Government's interest in that particular area, and they alert the manufacturer to the risks to which he is exposing the public, and very frequently as a result of that very simple task of communication from a governmental agency to the manufacturer, steps are taken by the manufacturer to eliminate these risks to the public, and thereby cut down on accidents. And in my presentation, I have cited a number of instances of that kind of activity by the Public Health Service, which has resulted demonstrably in a reduction of accidents and, therefore, ultimately in a saving to this country.

BUDGET REQUEST INCREASE

And so, sir, I ask you, in spite of the many calls upon you, to increase the budgetary allotment for this Accident Prevention Bureau. There are new demands being made on them that weren't anticipated at the time that these budgets were drawn. One is the Products Safety Commission that was just voted by the Senate. That was Senate Resolution 33. There is going to be a great goal, a demand for hard information in the area of product-caused damage, that this particular arm of the Public Health Service should be in a position to handle.

Senator HILL. How much increase would you ask?

Mr. ELKIND. I have asked for an increase from the present allotment of \$3,250,000 which permits the employment of 170 people to \$10 million which permits the employment of 350 people.

FLAMMABLE FABRICS ACT

Not only is there the Products Commission, the Products Safety Commission, but there is also the Flammable Fabrics Act, which is under consideration in Senator Magnuson's committee, and there are certain investigatory—

Senator HILL. Senator Cotton, here is a member of that committee, an important member.

Mr. ELKIND. Yes, indeed, and there are certain investigatory phases of that legislation which are noncontroversial; if the legislation passed at all it will certainly include those provisions and there, too, the injury control program of the Public Health Service will be called upon to in a sense undertake the responsibilities for the Government in those areas.

Thank you very much, sir.

PREPARED STATEMENT

Senator HILL. We appreciate your statement very much. We will have it appear in full in the record, sir.

Mr. ELKIND. Thank you.

Senator HILL. Thank you very much. I hope you make that engagement in New York.

Mr. ELKIND. And I do want to express my gratitude to the other witnesses for permitting me to appear out of order.

Senator HILL. We thank you very much for your statement. We certainly appreciate it.

Mr. ELKIND. Thank you, Senator.

(The statement follows:)

Mr. Chairman and distinguished Senators. My name is Arnold B. Elkind. I am an attorney-at-law and I have been in practice since 1939. During those 27 years that I have been practicing, a very substantial part of my income has been derived from handling cases in which people have sustained personal injuries or have died as the result of acts of negligence and carelessness. My professional world is a Dantesque nightmare peopled by maimed, burned, scarred, bereaved, disabled victims who have been disembodied and carved out of the fabric of normal society, assigned to a kind of half life, half death. Many of these people live with daily pain and are so economically stressed that they frequently represent an economic load, as well as a spiritual load, to their communities.

I presume that regardless of Governmental concern, regardless of warnings, and regardless of education and enlightenment, there will always be some small percentage of our nation who will suffer the consequences of unavoidable accidents. But in this magnificently gifted land, enriched with talented and creative genius and skill, we should have—we must have—a better understanding of the factors which enter into the destruction of man by his environment from accidental causes. The area of unavoidable accidents can be greatly minimized if we devote the required attention to the problem.

A beginning point, logically, is man himself, and the factors that make some individuals accident prone. Can a given individual's ability to exist safely in a complex environment with many risks be scientifically re-enforced?

Certainly, on a quantitative basis, research into this problem screams for attention. We are told that accidents kill more children up to the age of 15 than all diseases combined, and yet we seem to accept accidents to children as an inevitable price of our culture. As though we still suffer vestigial deference to ancient tribal rites, we seem to have accepted the need to sacrifice a certain number of our children each year on the altar of the great demon—Accident. We can establish educational regimen for cultivating safe living habits in children, but it should be based on scientific data rather than parent substitute generalities. Witness the accomplishments of the Driver Education Program in reducing automobile accidents at the teen-age level.

Even granting that no answers to the accident phenomenon can be obtained by scientific research, we absolutely must do more than pledge the conscientious and skilled effort which is represented by the circumscribed budget for the Injury Control Program of the Public Health Service.

For three years I served as the Chairman of the Consumer Protection Committee of the American Trial Lawyers Association, which is made up of about 21,000 lawyers who are involved with the legal problems of injured people and who have associated with one another because of their mutual interest in the legal professional problems of representing injured people. It is second only to the American Bar Association in numbers. In the course of my stewardship of the Consumer Protection program of the Association I enjoyed the opportunity of working with a number of people in the U.S. Public Health Service, particularly several of the distinguished and dedicated servants who devote their energies to the problems of injury control.

I asked for the budgetary estimates of the Public Health Service because I had felt that finally, with all of the hullabaloo about consumer protection, second, that this Injury Control Program of the Public Health Service would become viable so that it could provide an enlightened zone in the wasteland of ignorance which afflicts and characterizes the onslaughts of accidental injury and death against mankind. I was shocked to find that the Injury Control Program was virtually buried as a subsidiary concern of the very important and properly healthily budgeted Urban and Industrial Health Institute. After the effects of my initial shock had subsided, I then learned that the Urban and Industrial Health Institute was being transferred to Cincinnati and that by virtue of this shift the services of important skilled personnel might be lost to the Injury Control Program.

When I learned this I asked for the privilege of testifying as a voluntary witness, with the hope that I could adequately advocate to you the importance of the Injury Control Program. It is my conviction that at least 350 people could currently be successfully involved in the Injury Control Program in the United States in 1968, and that the program could be adjusted so as to spend \$10,000,000.00 in fiscal 1968 with a phased escalation thereafter, and this 10 million will save our nation 100 million dollars per year. Let me tell you why I have these views and why I urge this radical revision in appropriations.

I will not start with statistics. If you have not been impressed with the number of people who are injured and killed each year in accidents as compared with those who are killed or injured in wars and those who are afflicted with killing and crippling diseases, my restatement would lend no emphasis. I am certain that if the fulcrum on which appropriations turned was either the dimension or the magnitude of the accident evil there would be no difficulty in getting an increased appropriation for the Injury Control Program. Why then this relatively small appropriation? Is it because injuries and accidents are thought to be inevitable as a manifestation of man's basic propensity to be heedless of consequences at particular times and unmindful of his environment?

Let me suggest that mankind has many other inherent propensities that would be destructive. He is quarrelsome, envious, avaricious, and yet society develops legal systems at great expense to offset the destructive effects of these inherent weaknesses of man. Our legal systems and our religious institutions are manifestations of the societal approach to minimize the impact of what otherwise might be considered the inevitable consequences of human frailty.

But I ask you, Senators, where is the discipline, where is the learning, where is the research, what is the institution, that concerns itself with the total problem of the vulnerability of the human being to accidental injury? The challenge is so interdisciplinary that each discipline throws up its hands and says "Not for us". A catalytic coordinator is needed.

Like the little Dutch boy, the Government will pass a Hazardous Substances Law, a Flammable Fabrics Law, an Automobile Safety Law, a Food and Drug Law—and these and more fingers are needed—but are we overlooking in our preoccupation with the holes in the dike, the great opportunity to explore the feasibility of reducing the flood tide that besets the dikes? One of our ultimate goals should be to construct a dam of elevated prudence in our citizenry at one of the principal sources of many accidents.

Just think—a survey by C.B.S. in May of 1967, after all the publicity on seat belts, showed that the belts are generally not used even though installed and relatively simple to fasten. This suggests psychotic risk-taking which should be cured.

In a related area and to be more specific, and perhaps more realistic, a result devoutly to be wished by men of good will who believe in an optimum free enterprise system, is to develop in industry, and particularly amongst the manufacturers of consumer goods, and abiding and compulsive interest in design standards and a level of quality control that would markedly reduce product-caused injuries. But when manufacturers are approached to do something on a voluntary basis the first line of defense for the *status quo* all too frequently runs like this:

"There is no evidence", they will say, or "there is insufficient evidence from which you can assume that", for example, "a warning on a label would substantially reduce injury", or, for example, "that the inclusion of such and such a device would lead to a reduction of injuries"; or "that the adoption of such and such an inspection procedure, which would cost X additional dollars per unit, would substantially reduce injuries". The first line of defense for the wilfully sub-standard manufacturer or industry is the absence of hard information. All too many well intentioned safety programs are dead-ended by pious professions of ignorance, and the crusader for safety is often left with very little data to support his gut feelings that something should be done to eliminate a particular hazard.

The Injury Control Program of the Public Health Service has demonstrated that it is the appropriate cadre to develop in order, to spearhead the search for, and the utilization of, scientific information in the accident prevention area. Somehow or other, with a very small staff and operating on a shoestring, these people have demonstrated a special competence for digging out information and bringing it to the attention of the right people. Their formula seems to be to learn and to alert.

In the flammable fabrics area I was privileged last year to participate in a broad spectrum conference which unquestionably alerted the industry and opinion leaders on what the Service has learned of the unreasonable exposure of the public to the risks of being burned by flammable textiles. Currently this subject is finally receiving Congressional attention after a lag of 14 years, and the Service has been able to furnish dramatic and persuasive evidence on this subject for the Congress.

As a result of their surveillance of hospital records in Denver, the Service was able to dig out an unreasonable exposure to burns from heating pads and alerted the underwriters laboratories to the need for amendment of their specifications and a warning to the users of heating pads.

As a result of the research the Service sponsored at the State University of Iowa, the Service was able to learn of the unreasonable exposure to harm in the existing power take-offs on agricultural machinery, and when they channeled their knowledge to the right sources the power take-offs on most new agricultural machinery was redesigned.

Through their research at the Institute of Agricultural Medicine and their study of puncture wounds from flying objects thrown from power equipment, the Service learned that foreign objects were being projected from an unanticipated direction, and as a result many lawnmowers in the years to come will be designed so as to guard against this hazard.

Quite recently this group learned of the total lack of standardization in certain types of self-propelled house and farm equipment which presented extra hazards to consumers. When the Service advised the industry, a committee was formed to write a set of standards for this particular kind of equipment.

Congress must make it possible for this Service to learn more. They must learn the whys and wherefores of the electric shock hazard in home appliances. They must become a clearing house for information on consumer articles that cause injury. They must have test facilities and the manpower to utilize them so that independent Governmental analysis of the safety of products will become a reality. They must learn why there are so many accidents in bathrooms of American homes and make the information available. They must learn why so many children are injured in playgrounds and make the information available. They must study the particular problems of the aged and infirm in their home environment and make the information available. They must grant scholarships and aids to investigate the physiological or psychological factors which predispose some men to injury after injury while others go through life unscathed by sudden death or injury. Then there is the problem of coordinating the many disciplines that enter into the accident syndrome and stimulating communication of the knowledge obtained to educators for child-training purposes and to industries for engineering and quality control purposes. These are enormous pioneering tasks, but this is the agency which should be able to get the facts.

In addition to assuming the responsibilities for basic psychological and physiological research on the accident problem, there is in prospect new responsibilities which will impose further burdens on the already undermanned and underfinanced Injury Control Program. I had the privilege earlier this month of testifying before Senator Magnuson's Consumer Subcommittee of the Senate Committee on Commerce in support of S. 1003, a Bill to amend the Flammable Fabrics Act so as to increase the protection afforded consumers against injurious flammable fabrics.

Under Section 14 of S. 1003 the Secretary of Health, Education & Welfare is required to conduct continuing studies and investigations of deaths, injuries and economic losses resulting from accidental burning of products, fabrics or related materials, and is required to submit annually a report to the President and the Congress containing the results of the study and investigation. This additional work, logically and rationally, will be performed by the Injury Control Program if S. 1003 becomes law. My understanding is that there was no opposition to the investigative aspects of the proposed legislation and that it is non-controversial. Additionally, this same Senate Subcommittee has reported favorably on Resolution 33, which is a resolution to establish a National Commission on Product Safety.

This legislation also envisions studies and investigations of hazardous products, and it must be anticipated that the Injury Control Program will have a significant role to fulfill in connection with the implementation of the functions of the National Commission on Product Safety.

The people in the Injury Control Program simply cannot do more than scratch the surface with a net budget of \$3,250,000.00 and 170 people. Such a fund and such personnel could not even obtain, programme, and maintain for quick recall, the basic statistics on who got hurt by what.

The appropriation for the Injury Control Program of the Public Health Service must be increased and somehow removed from the shadowy substructure of the Cincinnati based Urban and Industrial Health Program.

There can be no excuse for continued ignorance in the accident field, particularly if it is the result of niggardly appropriations. I ask you, as spokesman for 520 million people who will be injured by accidents in the next ten years, who will suffer pain, disability and be economically unhinged, to at last finance an expedition to search for the facts as to why they are being victimized.

I implore your wisdom to recognize that an investment of 10 million dollars is good business if it can eventually reduce the costs of accidental injuries which is estimated to cost us 10 billion dollars each year.

I urge you to recognize the unassailable fact that the Injury Control Program of the Public Health Service is the only agency with the background and experience for developing the broad spectrum programme that is required. They have demonstrated that they deserve the opportunity to do this job. The time is rapidly approaching when you will need the hard information they can assemble. You can save a few years by giving them the wherewithal now to get moving on this vitally important and salutary activity.

I will be happy to answer any questions of the Senators.

AMERICAN NURSES' ASSOCIATION

Senator HILL. I have the statement presented by the American Nurses' Association which will be included in the hearings for the information and guidance of the committee and of the Senate.

(The statement follows:)

APPROPRIATIONS FOR THE DEPARTMENTS OF LABOR AND HEALTH, EDUCATION, AND WELFARE, AND RELATED AGENCIES

The American Nurses' Association is the national association of registered nurses. The Association has 54 constituent state and territorial associations with a membership of approximately 170,000 professional nurses.

The Association wishes to comment on certain items in H.R. 10196, the budgets for the Department of Health, Education, and Welfare and the Department of Labor.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

The ANA supports all of those programs for nursing which are administered by the Division of Nursing, USPHS. However, in our testimony we would like to comment on specific areas in which the Association has a special interest. Specifically, within the Nurse Training Act, we will comment on (1) authorizations for the nurse traineeship program; (2) educational opportunity grants, loans and recruitment monies; and (3) advantages of the transfer of funds. In addition, we will comment on the comprehensive planning grants (Partnership for Health), mental health appropriations, and appropriations for enforcement of regulations under Title VI of the Civil Rights Act.

First, we hope that you will make special note that funds for traineeships under the Nurse Training Act are not at the authorized ceiling. We recommend that the full eleven million dollars, which is authorized, be included in the budget. This is one area where complete funding would be of great value in helping to meet the critical nursing shortage both today and in the future.

These traineeship funds provide the teachers, the administrators, the supervisors and the clinical specialists who are crucial to the training programs which will supply the nation with well qualified nurse personnel. Teaching and supervisory personnel are necessary to enable schools to increase their enrollments. At present the faculty vacancy rate in all schools of nursing is 1,895.

In addition, the traineeship program is vital for the preparation of an adequate number of persons for such specialized procedures as heart surgery, kidney dialysis, organ replacement, vascular surgery, work in the operating theater—but more important, for post-operative care.

In order to meet these crucial needs, we urge that you appropriate the full eleven million dollars authorized for the traineeship program.

Second, the ANA supported the amendments to the Allied Health Professions Personnel Training Act which provide educational opportunity grants for nursing students and funds for recruitment into nursing. In addition, the amendments provide for transferability for construction funds.

The provisions for educational opportunity grants and recruitment funds are a most foresighted action by the federal government to reach young people and attract them into nursing. We feel that these provisions will be a real inducement for recruitment into nursing and that, in the future, consideration should be given to expanding both of these programs. Recent improvements in the economic rewards in nursing—coupled with these new federal inducements—should help to bring greater numbers of young people into the nursing profession.

Third, we would like to comment on the values of transferring funds unused under one provision of the Nurse Training Act to another provision of the Act where funds are obviously inadequate. The wisdom of this procedure has already been illustrated in action which has made it possible to transfer unrequested funds for hospital school construction to collegiate school construction where applications for existing funds have been oversubscribed.

This same pattern of unused funds has been evident in the provisions which provide formula grants to hospital schools of nursing. A large portion of the authorized funding for this purpose has been left unexpended simply because adequate numbers of applications have not been forthcoming. It appears that this pattern will continue, and we recommend that the unexpended funds which were authorized for this purpose be channeled into areas where funds are badly needed.

For example, there is a growing realization that the shortage of nurse personnel is not entirely a problem of numbers—but that poor utilization of nursing personnel contributes greatly to this shortage. Consequently, we feel that one meaningful way to attack this problem is through the investigation and study of the utilization of nursing personnel. We recommend that unused funds for formula grants to diploma schools be channeled into such studies.

In addition, we feel that these unused formula grant funds would also serve a valuable purpose for inservice and continuing education for employed staff as well as for development of innovative methods for improved teaching methods.

In addition to the budget items mentioned above which give direct support to nursing programs, the American Nurses' Association supports P.L. 89-749, the Comprehensive Health Planning Grants Act, now referred to as the Partnership for Health. We believe that this Act is one of the most significant laws enacted by the 89th Congress. It was strongly supported by the ANA in 1966.

The concepts contained in P.L. 89-749 are concepts which keep pace with the needs of society in the delivery of health services. The Congress has visualized a plan not only for today, but also for tomorrow with this partnership for health between national, state and local jurisdictions.

We recommend that the full request of \$143,628,000 for fiscal '68 be approved. The vitality and potential of this program will be hampered if the full appropriation is not authorized. The categorical programs need continued funding while statewide planning is being developed. As plans are developed at the state and local levels, the funds should be available for implementation of this planning. P.L. 89-749 is in the vanguard of legislative measures which will enable more effective delivery of health services to the American people. We urge the authorization of the full appropriation so that this Act may lead the way with force and success.

The ANA has been a supporter of the Community Mental Health and Community Mental Retardation Facilities Act, and has also favored federal support for initial staffing of these facilities. We supported the legislation because we were aware that the treatment of the mentally ill in state hospitals was handicapped because of the size, location and difficulty in staffing. Too frequently care was, and still is, custodial rather than therapeutic.

The availability of services in localities where people live can result in early recognition of illness and intervention at a time when treatment can be more effective and lasting. Persons able to be discharged from the hospital can profit from follow-up in their homes. Establishment of the mental health centers is providing a means, not only for helping patients in their own communities, but also for developing new types of treatment programs that are less costly than the traditional confinement in a long-term institution.

We believe that the full authorization for this program is fully justified.

The American Nurses' Association wholeheartedly supports the \$1.1 million for enforcement of Title VI of the Civil Rights Act. The Association has long supported the belief that all Americans should enjoy the same political and civil rights; and that health, education and welfare programs supported by tax funds, in full or in part, should be available to all regardless of race, creed, color or national origin. If the task of insuring these rights to all of our citizens is to be accomplished adequate funds must be available.

DEPARTMENT OF LABOR

The ANA has an interest in a number of programs operated by the Department of Labor. These remarks will be addressed to three specific areas:

1. Manpower, Development, and Training Act
2. Bureau of Labor Statistics in the Wage and Hour Division
3. Womens Bureau

First, in 1965 the Manpower, Development, and Training Act was amended to include refresher courses for graduate licensed nurses. Information about the training programs was furnished to the ANA's constituent associations able to stimulate nurses not currently practicing, to return to practice following a period of organized retraining. The ANA is cooperating with the Department of Labor to carry out a mandate of the administration to return 10,000 nurses to active practice within this fiscal year. In any occupation that is over 98 percent female there is a continual need to replace those leaving the field for marriage and families. We are now concentrating on returning many of these nurses to practice, as well as recruiting new persons into the nursing profession.

Approximately 42 percent of non-practicing nurses are married and have children. These women have usually been away from nursing practice for five or more years.

With the rapid changes in medical science, nurses who return to work must update their skills. With the coordinated planning between the Department of Labor and the Department of Health, Education, and Welfare, we expect to influence many more non-practicing nurses to return to full or part-time work. Therefore, we strongly support the funds for the Office of Manpower, Development and Training for the training and retraining of health manpower.

The Bureau of Labor Statistics has been conducting salary surveys in hospitals every three years since 1956-57. These data have been extremely useful. They have shown dramatically the disparity in the salaries and wages paid to hospital employees. The low economic rewards for hospital employees undoubtedly has had a deleterious effect on recruitment into the health occupations.

With the spectacular rises in nurse salaries in certain parts of the country during this past year, and the expectation that this trend will continue. BLS data is outdated before it is published. The survey completed in 1966 still has not been released.

The BLS has been collecting data in industry on semi-annual measure of rate of wage changes. The Bureau now will also collect data on non-manufacturing industries and will include hospitals in the surveys. It is expected that hospitals can be identified separately. The surveys will lump all hospital personnel and will be shown on a national basis only. While this will provide a valuable measure of the rate changes in hospitals, particularly as it compares with other industries it is no substitute for the kinds of data we receive from the studies of hospital employment conditions. Because of the rapid changes in hospital salary information we urge that the surveys be conducted annually, rather than every three years.

The ANA has continuously supported the programs of the Womens Bureau. Although the ANA is not a women's organization, the profession is predominately female, so we are interested in the programs that are carried on by the Bureau. The Bureau has been restricted by a static budget for many years which reduces the possibility for expansion of programs. The limited number of staff cannot fulfill the many requests for consultative services. With the additional work involved in assisting the 54 state, territorial and municipal commissions on the status of women, other creative programs cannot be developed. The addition of several more professional staff would ease the workload and provide for a more dynamic Women's Bureau.

EMERGENCY HEALTH SERVICES BRANCH

Senator HILL. I shall place in the hearings the statement of Mr. Charles A. Eisenhardt, Jr., with regard to financing of the emergency health services branch of the Public Health Service.
(The statement follows:)

STATEMENT OF CHARLES A. EISENHARDT, JR.

I am Charles A. Eisenhardt, Jr., President of the Ambulance Manufacturers Association and Chairman of the Board of an ambulance manufacturer, The Hess & Eisenhardt Company of Cincinnati, Ohio. I have spent 37 years in all phases of the ambulance and casket car business from sales in all parts of our country to design and manufacture. In the course of this experience I have observed and studied civilian ambulance services in all parts of our country.

In the past ambulance service has been provided by:

1. Funeral directors
2. Private ambulance companies who are free enterprise entrepreneurs
3. Municipalities that operate ambulances either as a separate department or attached to a city hospital complex as a part of police service or as a part of fire service
4. Volunteer squads, sometimes called rescue squads or first aid squads
5. Volunteer Fire departments who operate ambulance as a part of their total community service
6. A small number of hospitals
7. The military

Funeral directors provide more than 50% of the ambulance service available in our country.

Of all the vehicles manufactured by our industry, approximately two-thirds are the type known as the combination ambulance and casket car used by the funeral directors of our smaller communities. This supports the fact that more than 50% of all ambulance service has been rendered by funeral directors.

Because of the narrowing of the base application of the wage and hour law, many funeral directors are faced with the problem of additional payroll costs to provide around the clock ambulance service with very little if any hope for additional compensating income, placing them in the position of having to discontinue ambulance service in order to avoid financial disaster.

Careful cost studies made by efficient private ambulance operators indicate that in order for a private operator to have a reasonable opportunity in the private ambulance field he must be able to draw all of the business from a community of approximately 100,000 people and he must be paid at least \$25 for every trip. Additional studies indicate that a private ambulance operator, making a minimum investment of approximately \$35,000 and operating in a town of 82,000 people, working in a family type operation where the wife receives calls and dispatches the ambulance and the husband works as one of the ambulance attendants, as well as manager, would have an operating cost of approximately \$70,000 per year. Such an operation could be reasonably expected to make a profit of \$5,000 per year if it had all the business in a community of 82,000 people and was able to charge and collect \$25 per average trip. These are minimum figures based on current labor costs, and the probability is that as ambulance attendant training standards are raised, compensation will likewise have to be raised in order to secure capable employees.

Further studies of ambulance operating costs show that, in order to provide 24 hour service it costs \$30,000 per year to man one ambulance. Total labor costs studies in private operation show that 60% of all costs are manpower costs.

If ambulance services now being rendered by funeral directors are discontinued in communities of less than the 80 to 85 thousand people required to support the smallest type of private ambulance operator, these communities will be faced with the problem of providing this essential emergency medical transportation in another manner.

In the eastern part of our country, ambulance service in our smaller communities is provided for the most part by the volunteer groups known as rescue squads or first aid squads. The economic factor that makes good ambulance service available from rescue squads is the donated services of the volunteers. This reduces the total community operating cost by 60%, and the volunteers

thus far have been successful in securing funds for the purchase of equipment, supplies and other operating expenses, either through personal solicitation, community fund raising activities and some tax support. In the state of New Jersey, a town through its council or a township through its trustees is permitted to give, from tax funds, up to \$10,000 per year to an accredited rescue squad. Accreditation is provided by an accreditation committee appointed by the New Jersey First Aid Council. It is estimated that in the state of New Jersey alone approximately 19,000 people are engaged in this essential volunteer community service. The same donated service factor makes it possible likewise for volunteer fire companies to operate ambulances manned by trained rescue squads as a part of their total community service.

The people engaged in this essential humanitarian work on behalf of their fellowman usually come from among the ranks of our good solid American middle class. They may not be sufficiently affluent to give of their money, but they give generously of themselves. They attend training courses to increase their knowledge and sharpen their para medical skills.

As organizations who render ambulance service change, thousands of our American communities can, in my opinion, best provide themselves with proper emergency ambulance service by organizing volunteer ambulance groups of the type which I have just described.

To the best of my knowledge there is only one central association of volunteer ambulance people that is capable of supplying the knowledge of how to go about organizing a volunteer rescue squad in a community, and that is the International Rescue and First Aid Association. This association is made up of many capable members who have had the necessary organizing and squad management experience. In my opinion, if the Public Health Service, through their Emergency Health Services branch, could underwrite the cost, I believe that the association could and would supply the organizing personnel with the knowhow, to help communities who can best use the volunteer method to organize volunteer squads and thereby provide themselves with adequate ambulance service.

It seems logical to me that this should be a function of the Emergency Health Services branch for the Public Health Service district offices that are already established could act as clearing houses to receive requests and direct organization activities.

It is my considered opinion that if this method is used to provide our smaller cities and towns with ambulance service we will be able to establish good ambulance service in all parts of our country and that the method will provide us with quality service at the lowest possible cost to our country as a whole.

We may hear that the way to provide ambulance service is for government to subsidize operations in communities too small to support commercial service. I cannot agree with this position. Subsidies have a way of becoming permanent crutches and would require a continuing supply of funds.

If however the Public Health Service could direct and support the organization phase of the volunteer ambulance movement we would incur a one time cost. This method in effect is spending money for education. The Public Health Service would be teaching our communities how to help themselves. Isn't this a far more desirable method than continuing subsidies?

The volunteer ambulance movement is a successful way to provide this essential service to our citizens. The proof of this can be seen in hundreds of communities in our eastern states. It taps a resource that exists in every community, "Community Pride". It fosters and develops community self reliance. In my opinion this community self reliance is a far better attitude than one which would continue to look to the central government to support or supply essential service.

It certainly seems strange that ambulance service has been so neglected when we compare it to other types of emergency service. It is common in our cities to see a fire emergency answered by possibly a half million dollars worth of fire apparatus, equipment, which is available to protect buildings which can be replaced and to see an inadequate vehicle, improperly manned, without full emergency equipment be sent to save the one thing which cannot be replaced—a human life.

The vehicle for organizing quality volunteer ambulance service is available. The job can be done if the educational phase can be supported during the organizing period.

Ambulance services are, of course, but one element of the total system of emergency health services with which we are concerned. It is imperative that the quality and quantity of the entire system be improved—and promptly—if one of the most critical public health needs of the American people is to be met. Training of first aid and rescue personnel, improvements in equipment, communications and hospital emergency facilities, are all of vital significance. A program proposed by the Emergency Health Services Branch will contribute significantly to overcoming deficiencies in all of these areas.

I respectfully urge that you consider the personal importance of this problem to every citizen of our country before making a final decision on the Public Health Service appropriation.

STATEMENT OF DR. EFREN RAMIREZ, NARCOTICS COORDINATOR TO THE MAYOR OF NEW YORK CITY

FUNDS TO IMPLEMENT NARCOTICS ADDICT REHABILITATION ACT OF 1966

Senator HILL. Now, Mr. Marvin B. Dinsmore, on behalf of the National Association for Retarded Children.

Mr. Dinsmore is not here?

All right, Dr. Efren Ramirez, narcotics coordinator for New York City.

All right, sir; you may proceed, sir.

NEW YORK CITY OFFICE DEVELOPMENT

Dr. RAMIREZ. Mr. Chairman, gentlemen, I want to thank you for the opportunity to be here with you today.

My name is Efren Ramirez. I am a physician, psychiatrist and for the past year and a half, I have been developing a new agency in the city of New York, the office of the coordinator of addicts programs. The mayor of the city of New York, the Honorable John Lindsay, has asked me to convey to you his appreciation for the opportunity to present today to this committee the position of the city of New York in relation to section 401 of the Narcotic Addict Rehabilitation Act of 1966, which provides funds for development of treatment and rehabilitation programs for narcotics addicts in the States and in the municipalities.

OFFICE RESPONSIBILITIES

My office has the responsibility to develop for the city of New York a comprehensive approach, comprehensive system of treatment and rehabilitation for approximately 100,000 narcotics addicts, and it further has the responsibility of developing prevention and education services for approximately 300,000 individuals.

Senator HILL. 300,000?

Dr. RAMIREZ. Yes; who are in danger of becoming addicted; youngsters, new immigrants from other parts of the Nation, poor people, and even in some sections affluent individuals.

Senator COTTON. What do you mean by "in danger of becoming addicted"? Do you mean they are actually taking the drug, but haven't taken it for a long period, or you are afraid they are about to resort to drugs?

Dr. RAMIREZ. As we say, they are fooling around. They are testing, they are experimenting, they are taking pills or marihuana, or becoming involved with groups of people that are known to be addicted, becoming engaged, gradually, in the way of life of the addict.

Before actually being addicted to narcotics.

Senator COTTON. And that 300,000 is an estimate?

Dr. RAMIREZ. That is a conservative estimate, Senator.

In our planning to develop this treatment of rehabilitative service for the 100,000 narcotics addicted and prevention for 300,000 people, we have projected for the future, for the next 3 years, programs which would cover the entire city of New York, and will cost for the first year around a figure of \$30 million. These funds, we have been trying to get these funds from the four available sources, private funds, city, State, and Federal. The funds that are made available through this act take a large portion of our own money for development of programs.

AUTHORIZATION AND BUDGET REQUEST

It is our understanding that over \$15 million had been authorized for the support of a wide variety of treatment of addiction programs through this law. Only \$4 million have actually been requested by the administration for the entire Nation.

NEW YORK CITY PROGRAM COST

This came as a shock to us, in a way. We have been working for the past several months for a program of justification for a proposal that requests in the vicinity of \$7 million for the city of New York alone.

And these funds we are requesting from this law, from this act, are for the support of essential services for the addicts, essentially psychiatric and self-help, to aid in our programs when enough medical and psychiatric services are not available, residential and military aftercare services, a decentralized citywide toxicology laboratory, accelerated training programs for professional and nonprofessional personnel, education, and information services and materials, which is of course, geared primarily to the public and to the younger groups. Some research projects on the provisions for centralized administration, cost, and on overall program evaluation.

In my printed statement, which I have made available to this committee, there is an appended table delineating the breakdown.

Senator HILL. All right, we will have this appear in the record in full.

(The table follows:)

TABLE 1.—*Services to be funded through the narcotics addiction rehabilitation Act of 1966*

Services:

1. Detoxification services (space provided by the Department of Hospitals, New York City) at \$100,000, 6 15-bed units—	\$600, 000
2. In-patient psychiatric services (space provided by the Department of Hospitals, New York City) at \$150,000, 6 30-bed units—	900, 000
3. Self-help therapeutic communities, at \$300,000, 4—	1, 200, 000
4. Residential after-care, at \$150,000, 6 units—	900, 000
5. Ambulatory after-care—	250, 000
6. Toxicology laboratory—	750, 000
7. Training program—	800, 000
8. Consultation services—	200, 000
9. Potential demonstration projects (funds converted from on-going programs)	
10. Educational information program—	500, 000
11. Research —	200, 000
12. Program evaluation—	200, 000
13. Central administration—	500, 000
Total —	7, 000, 000

PROGRAM NONFUNDING FROM OTHER SOURCES

Dr. RAMIREZ. Thank you. I want to make clear to the distinguished members of this committee that the request for funds does not include any program that can be conceivably funded from other sources, such as city tax-levied funds, State reimbursement, State grants, OEO moneys, or the conversion of funds which at the moment are included in the budget of related departments in the city of New York.

There is a second chart in my written presentation which summarizes the actual and prospective funds available to New York City at the present time for the programs, in which I have not included narcotics addicts rehabilitation proposal.

OEO GRANT CONTINGENCY

To highlight one item, part of the programs which have to do with the development of services at the community level will be supported by a grant from the Office of Economic Opportunity. They have promised close to \$4½ million, contingent to our securing additional funds for the services which I have outlined in the beginning of my presentation. And this is a double contingency here which makes these two proposals extremely interrelated and crucial.

PROGRAM MAGNITUDE

Yet, assuming that all the funds requested from the different sources were made available to the office or the coordinator of addicts programs in the city of New York, we would be able to provide only minimal induction, treatment, and reentry services for approximately 10,000 addicts in the coming year.

Yet the tragic reality is that 10,000 addicts represent only one-third of the medically known narcotics addicts in the city of New York.

Senator Hill, you would be interested to know that in the health departments in the city of New York, we have a central narcotic registry, and in which we have at least 35,000 unduplicated records of

active addicts. We know that besides those addicts who are known to the medical profession, there are many others who go undetected for long periods of time. These programs are designed to seek them out and to identify them in prevention programs in time. We have a few numbers, a few statistics which highlight the size of this problem in New York City. Between 1963 and 1964, there was a 75-percent increase in criminal arrests of admitted narcotic users under the age of 16 years, and 95-percent increase in record of violation of the narcotics law by young people between the ages of 16 and 20.

ADDICT THEFTS

Failure so far in coming to grips in addicts in a city like New York has meant an estimated \$500 million to a billion dollars' worth of goods stolen by addicts each year in our city.

I am trying by the use of a few simple but illustrating statistics to show that the problem we face in terms of human suffering and waste is overwhelming in size and scope and the tragic inability of previous methods to effect more than a small dent in a seemingly impenetrable surface.

EXECUTIVE ORDER No. 16 OF MAYOR LINDSAY

The whole reason of being of the office of coordination programs, whose responsibility and duties are summarized in an executive order which I would make available to the committee——

Senator HILL. All right, sir.

(The order follows:)

EXECUTIVE ORDER No. 16, JULY 7, 1966

DUTIES AND RESPONSIBILITIES OF THE NARCOTICS COORDINATOR

Whereas, The control of narcotics addiction is a matter of major concern to this administration and to the people of the City of New York; and

Whereas, It is necessary and desirable to define the responsibilities of the Narcotics Coordinator for developing comprehensive and coordinated plans for dealing effectively with addiction resulting from narcotics and dangerous drugs of any type;

Now, therefore, by the power vested in me as Mayor of The City of New York, it is hereby ordered as follows:

Section 1. Duties of the Narcotics Coordinator

(a) Be responsible for development, coordination and evaluation of

(1) programs designed for the care, treatment and rehabilitation of persons addicted to narcotics and dangerous drugs of any type, referred to subsequently in this Executive Order as addicts.

(2) research and demonstration projects established to obtain information relating to the care, treatment and rehabilitation of addicts by agencies of The City of New York or by voluntary and private agencies financed or otherwise supported in whole or in part by The City of New York.

(b) Advise the Deputy Mayor/City Administrator, and through him, the Mayor, of all matters pertaining to addicts, including research, demonstration, services, legislation, education, training and related matters including the status of City programs, and other programs sponsored in whole or in part by the City, providing care, treatment and rehabilitation of addicts.

(c) Evaluate present and proposed research designs, demonstration projects, service programs and other requests related to addicts in New York City before public funds are made available.

(d) Serve as a consultant to public, voluntary and private agencies working with addicts.

(e) Determine the pertinent data relating to addicts to be collected by such agencies and coordinate the collection of such data.

(f) Undertake or promote educational programs to acquaint the public with the problems, prevention and control of addiction resulting from narcotics and other dangerous drugs.

(g) Undertake or promote training programs for persons in public, voluntary and private agencies dealing with addicts, including particularly the New York State Narcotics Addiction Control Commission.

(h) Represent the Mayor and The City of New York in matters related to addiction.

(i) Participate in cooperative efforts of the Federal, State and regional governments to deal with the problems of addiction.

Section 2. This order shall take effect on the date hereof and rescinds and supersedes Executive Order No. 99, dated November 3, 1961, and Executive Order No. 182, dated December 23, 1965.

JOHN V. LINDSAY, *Mayor*.

PROGRAM COMPREHENSIVENESS

Dr. RAMIREZ. The whole reason of being of the office of coordination programs is to make sure that all the available, medical expertise, experience, knowledge, culled from several sources in the world, New York, Federal programs outside of the States, be focused on this problem, which takes its most dramatic example in a city like New York.

But that we know is already lifting its head in cities all across the Nation. It is true that in New York City we have perhaps 50 percent of the known narcotics addicts of the entire Nation, yet we know, because we have very, very frequent contact from all over the Nation, that addicts, especially in its pre-narcotic forms, in drug abuse, barbiturate addicts, the utilization by youngsters of hallucinogens, marihuana, LSD, and so forth, is rapidly spreading throughout the Nation. We feel that a thorough and a comprehensive program bringing together all available resources, clinical, financial, from all sources from all different agencies, private, public, State, Federal, in a place like New York City, could give us very important understanding and experience and knowledge, so that these can be shared with other cities all across the Nation, so that cities like Chicago, and Houston, and Topeka and Los Angeles, and Seattle, Philadelphia, and scores of others will avoid the tragic reality that we face right now in New York City.

So we are appealing to you, sir, to provide to New York City adequate support for this enterprise.

LONG AND COMPLICATED TREATMENT FOR ADDICTS

There is a very short statement in my presentation about the nature of our program. I will not go into it, except to say that—

Senator HILL. We will have it appear in full in the record, sir.

Dr. RAMIREZ. Yes, sir. Except to say that the treatment as a result of the patient addict is a long and complicated process. We have found some breakthroughs. Some of them are clinical, new methods, new research approaches, but the most important breakthrough is what New York City is doing, that instead of trying small pilot projects, fragmented, unrelated to each other, we are trying for the first time in the history of the city to bring together all possible approaches, methods, techniques, programs, into a comprehensive united front.

So, there is no mystery, no magic in our approach, it is only the thoroughness which we are trying to deal with it.

OTHER CITY PROGRAMS

Several cities, as I said before, across the Nation have become aware of our efforts. They have communicated with us, and they have asked our advice, and we have given this advice to them, and I am sure that you will be receiving, even if you haven't yet, similar requests for support from cities such as Boston, San Juan, Hartford, Philadelphia, Topeka, Chicago, and so on.

FEDERAL SUPPORT FOR NEW YORK CITY PROGRAM

New York City particularly requests substantial help from the Federal Government, to handle the problem which is too large for municipal or State resources alone. At the same time, perhaps in exchange, again, we offer our experience and the knowledge gained from the confrontation with our own harsh reality to other cities across the land, so that they may avoid, if possible, our present difficult situation.

Treatment and rehabilitation of addicts is a complex task in itself. Coping with the anxiety, the frustration, and the fear of victimized parents, relatives, and neighbors is sometimes more difficult. Having to deal with both the complexities of treating tens of thousands of addicts and with the collective frustrations of hundreds of thousands of victims in a large city will become an intolerable situation unless adequate resources are provided to deal with it.

REQUEST FOR AUTHORIZED APPROPRIATION

Fifteen million dollars for the entire Nation is a meager beginning. The proposed reduction to \$4 million is frankly and respectfully, sir, untenable. I strongly urge the members of this committee to appropriate the full amount authorized by the law, and furthermore, I strongly recommend careful consideration of our suggestion to increase the funds available beyond the level provided at present, so that Federal participation with municipalities effected by this addiction problem will be proportionate to the demonstrated needs of the cities.

I am authorized to say that both Senator Javits and Senator Kennedy will be making statements in support of this position. I cannot overemphasize the urgency with which we make this request, and let me assure you, gentlemen, that myself and my entire staff at the office of the coordinator of addicts programs for the city of New York are at your disposal, to provide any additional information you might deem necessary to further substantiate our requests.

Senator HILL. All right, we thank you very much, sir. Thank you very much for your statement.

(The prepared statement follows:)

The Mayor of the City of New York, the Honorable John V. Lindsay, has asked me to convey to you his appreciation for the opportunity of representing to this Committee the position of the City of New York in relation to section 401 of the Narcotic Addict Rehabilitation Act of 1966.

It is our understanding that although fifteen million dollars has been authorized for the support of a wide variety of treatment and rehabilitation programs for narcotics addicts for the fiscal year 1967-1968, only four million dollars have actually been requested by the Administration for the entire nation.

I want this Committee to be fully cognizant of the fact that for the past three months the Office of Coordinator of Addiction Programs of the City of New York has been outlining a proposal requesting seven million dollars for the support of

essential detoxification services; intensive in-patient psychiatric services; self-help therapeutic communities; residential ambulatory after-care services; centralized city-wide toxicology laboratory services; accelerated training programs for professional and non-professional personnel; education and information services and materials; selected research projects; and provisions for central administration costs and an over-all program evaluation. A table delineating the estimated costs on each item is appended.

Furthermore, I want to make clear to the distinguished members of this Committee that this request for funds does not include any program that can be conceivably funded from other sources such as City Tax levy funds, State Reimbursement funds, State grants, OEO monies, or the conversion of funds which, at this moment, are included in the budgets of related Departments of the City of New York such as Police, Corrections, Hospitals, Health, Welfare, Education, or the Human Resources Administration.

A second chart, which is also appended, summarizes the actual and prospective funds available to New York City at the present time for the programs which are not included in the NARA proposal. It is important to my office that you understand the funds already promised us from OEO, were appropriated out of their 1966-1967 budget and that at the present time no federal funds have been granted to us for the fiscal year ending June 30, 1968.

Assuming that the funds requested from all sources are made available to my office, we would be able to provide only minimal Induction, Treatment, and Re-Entry Services for approximately 10,000 addicts in the coming year. The tragic reality is that 10,000 addicts represent only one-third of the known narcotics addict population of the City of New York. We know, however, that there are many others who go undetected for long periods of time, and therefore for every addict we know about, there are probably three others that we do not. New York City police reports show that narcotics addiction is increasing steadily and relentlessly, and illustrate the relationship between narcotics and crime. Between 1963-1964, there was a 75% increase in criminal arrests of admitted narcotics users under the age of 16 years, and a 95% increase in arrests for violation of the narcotics law by young people between the ages of 16 and 20. The failure so far in coming to grips with addiction has meant an estimated five hundred million dollars to a billion dollars worth of goods stolen by addicts each year in New York.

I am trying, by the use of a few simple but devastating statistics to show you the problem we face in terms of human suffering and waste, in its overwhelming size and scope, and in the tragic inability of previous methods of attack to effect more than a small dent in its seemingly impenetrable surface.

In offering a new comprehensive approach to the treatment and prevention of drug addiction, I hope to be able to begin the long and difficult struggle of reversing the trend in the statistics I have quoted to you.

My method is based on the findings of a demonstration project which I and others have developed over the past six years in the Commonwealth of Puerto Rico. The results of this project have been encouraging enough to suggest that it might provide a model for treatment of addiction in New York City. In a study of the first 124 drug addicts to receive treatment under our Puerto Rican program, we found that after a period of 3½ years, only 7 or 5.6% had relapsed into taking drugs. This percentage is almost a direct reversal of previous statistics in that the relapse rate up to now has been close to 92% in Federal institutions and over 70% in even the most advanced experimental centers in the United States.

It is my observation that persons who have succumbed to drug use all have in common the existence of certain character disorders in their psychological makeup. I would like to give you a brief description of my model for the comprehensive management of these character disorders within the specific frame of reference of the drug abuser.

Drug abuse is a symptomatic behavioral complex which reflects a kaleidoscopic combination of intrapsychic, interpersonal, and impersonal factors impinging on an individual. In the overwhelming majority of cases, the addict makes a sometimes gradual, sometimes abrupt decision to choose involvement in the drug scene as a way of living with his particular mosaic of impinging factors.

To do so, he disengages himself from the main stream of his social environment and seeks engagement, partial or complete, in a highly psychopathic culture. This subculture may be as apparent and visual as is the minority group ghetto, or it may exist subtly and insidiously.

The task of providing for the recovery of those engaged in such social deviations then, becomes definable as one of constructing a sequence of changing sub-

cultural settings and institutions which are far removed from the extremes of both the highly psychopathic subculture on the one hand, and the subculture of individual choice which will most completely represent the maximum options for achieving individual productive potential on the other. Our model reproduces this sequence of changing environments. By gradually and productively engaging in each progressive environment, the patient achieves both basic character modifications and a highly increased capacity to function adequately in the society of his choice without having to resort to drugs.

The process of recovery requires in my experience an average of between two and three years. Three phases within this process are easily identifiable. The first one, Inductions, last an average of two or three months, and can be described as primarily a training process that engages the raw, unmotivated drug addict in the "street", (the "street" can be located in the open community or in a correctional or involuntary commitment facility) and carries him through gradual detoxification that may be completed in a day-treatment center or in a hospital ward. The clean addict is then challenged to make a demonstrable commitment to long-term treatment leading up to his eventual rehabilitation.

The second phase, Treatment, lasts for an average of six to eight months and applies the principles of total milieu therapy to achieve the modification of psychopathic attitudes and to reinforce productive attitudes both in the patients and in the staff members. In this way, the treatment phase also becomes an important staff training setting. It carries the patient from the point of commitment to long-term rehabilitation to stage where his over-all consistent behavior with peers, staff, relatives and neighbors is such that he is regarded by all as a productive individual, rather than as a social parasite. The patient is viewed as having received optimum help and is discharged to the last phase.

This phase, Re-Entry, lasts about a year. It provides three main services: (a) an evaluation of the effectiveness of phases I and II; and (b) the all-important opportunity to the ex-addict to confirm the strength of his rehabilitation to his own satisfaction through a process of gradual confrontation with progressively demanding emotional, vocational and social tasks.

After this phase is completed the ex-addict is certified as rehabilitated. As a rehabilitated person, he is free and will exercise his choice in either staying with the program as an employee (if he qualifies in equal competition with others) or going to other work. He is eligible for vocational training, individual treatment and counseling, and educational opportunities sponsored by the program. At the same time, he has agreed to cooperate with any kind of follow-up procedure which for research purposes the program may require of him.

In our attempts to develop this conceptual model and translate it into an ever widening field of action, we have come into contact with a particularly painful and frustrating response on the part of many individuals who become involved with us. This response, resistance to change, grown stronger to the degree that it touches one's most cherished assumptions, and is clearly a debilitating force when pitted against attempts to find a positive solution to human problems. Resistance is not, however, an abnormal phenomenon, nor a symptom of illness and maladjustment, but in order to combat it effectively we must first define its characteristics. If resistance is intrapersonal, it reflects the difficulty on the part of the individual to be responsible for his own life. This type we expect to find on the part of the addict still living the life of the street before he has been confronted with the possibility of treatment and cure. Intra-personal resistance is also characteristic of those who form the culture surrounding the addict and exist in monotonous and constant dependency. Resistance can also be inter-personal, which indicates difficulties in coping with authority relationships. This typifies the attitudes in many communities which cause people to turn their backs on the problem of drug addiction when they are the very ones who could be stimulating action to wipe out the conditions which foster its growth.

The progress of the prevention program in the communities as the progress of the addict rehabilitation program itself, can be measured by the extent to which resistance to it has been allayed. There are three basic stages in this process: the initial resistance; the working through of this resistance; and finally, the conquering of resistance and the working together towards common goals. It is the responsibility of man, be he an addict, a psychiatrist, a politician or a faceless member of the species, to re-examine his basic attitudes in an attempt to overcome those characterological limitations which prevent him from taking a more active part in the world around him.

Recognizing that addiction in New York City is only one dramatic example of a problem that is gripping communities across the country, Mayor Lindsay has made a commitment to attack this problem in all seriousness, realizing on the one hand that the time for small pilot projects is past, and on the other hand, that the investment in such comprehensive programs is actually negligible if compared with the actual waste of social and economic resources resulting from the addiction problem.

Although it is true that one-half of the heroin addiction in the country occurs in New York City, it is equally true that addiction to narcotics, barbiturates, or addiction as manifested in the use of stimulants, hallucinogens, and other dangerous substances, is a wide-spread phenomenon throughout the entire nation.

Several cities across the nation have in response to our efforts, asked for and received advice from us on a comprehensive approach to the treatment and prevention of addiction. I am sure that you will be receiving urgent requests for support from cities such as Boston, New York, Hartford, Philadelphia, Topeka, Chicago, Houston, San Antonio, Los Angeles, and San Francisco.

New York City, in particular, request substantial help from the Federal Government to handle a problem which is too large for Municipal and State resources alone. At the same time, perhaps in exchange, we offer our experience and the knowledge gained from the confrontation with our own harsh reality, to other cities across the land so that they may avoid, if possible, our present difficult situation.

Treatment and rehabilitation of addicts is a complex task in itself. Coping with the anxiety, the frustration and the fear of victimized parents, relatives, and neighbors is sometimes even more difficult. Dealing with both the complexities of treating tens of thousands of addicts, and with the collective frustrations of hundreds of thousands of victims will become an intolerable situation unless adequate resources are provided.

Fifteen million dollars for the entire nation is a meager beginning. The proposed reduction to four million dollars is untenable. I strongly urge the members of this Committee to appropriate the full amount authorized by the law, and furthermore, I strongly recommend careful consideration of our suggestion to increase the funds available through this bill beyond the level authorized at present, so that the federal participation with the municipalities affected by this Addiction problem will be proportionate to the demonstrated needs of these cities.

Let me assure you, Gentlemen, that my entire staff is at your disposal to provide any additional information you might deem necessary to further substantiate our requests.

Thank you.

Office of Coordinator of Addiction Programs, 1967-68 budget analysis

	Jobs	Amount
Executive management: Personal service.....	21	\$174,675
Other professional services.....		97,500
Administrative services.....	40	232,090
OTPS (supplies, equipment, etc.).....		169,550
Rehabilitation services.....	39	317,013
Lump sum appropriation for personal and other than personal service for State narcotics addiction programs (to be scheduled).....		3,000,000
Lump sum appropriation (OEO, to be scheduled) (pending).....		4,500,000
Contractual services.....		550,000
Prevention of addiction.....	9	74,100
Lump sum appropriation for expansion of services, personal service, other than personal service.....		2,000,000
Grand total.....		11,114,928

Senator Hill: I have the statement of Senator Robert F. Kennedy, of New York, in which he presents his views on narcotics addiction and requests appropriation of the full authorization for narcotics rehabilitation.

(The statement follows:)

STATEMENT OF SENATOR ROBERT F. KENNEDY

Mr. Chairman, there are somewhere between 50,000 and 100,000 addicts in this country. Over 35,000 of them live in New York City.

The addict's use of drugs affects not only his life but the lives of his family and his neighbors. Moreover, in his efforts to maintain his supply of narcotics he takes a toll on our entire society. For narcotic drugs are expensive and all too often the addict obtains the necessary monies through crime. Thus it is estimated that many addicts steal almost \$100 a day to pay for their habit. In New York City, we are told, better than 50% of the petty crimes are committed by addicts seeking money for drugs.

Obviously the use of narcotics is a serious problem that we must make far greater efforts to solve than we have done so far. Last year, the Congress took a first step toward combating drug addiction when it passed the Narcotics Rehabilitation Act, authorizing the appropriation of \$15 million to be used for grants to States and municipalities for undertaking rehabilitative services.

Some cities such as New York have now made a determined start toward providing such services to addicts. At the same time, they have taken the very important step of establishing programs to prevent addiction in persons whose behavior indicates pre-addiction drug use. In describing New York City's comprehensive plan for dealing with drug addiction, Dr. Ramirez has just stated that it encompasses a wide variety of programs.

First, it attempts to instill in the addict a desire to do something about his problem. Outside assistance will be of no avail if the narcotics user is determined to resist it. Second, the addict is provided with treatment in a therapeutic community staffed by professional personnel. Third, this plan provides for a gradual and supervised method of returning the former addict to society. The emphasis is placed on vocational counseling and then personal responsibility. Finally, New York City is in the process of establishing juvenile evaluation and prevention clinics to isolate and treat pre-addiction narcotics users in the community.

To finance these badly needed programs requires State and local assistance and a significant Federal contribution. The investment may seem substantial, but in fact it is quite small when compared with the social costs of addiction. Counted within these costs are the hundreds of millions of dollars that are stolen each year by the addict and the millions of dollars that must be spent to hire police and build correctional facilities to deal with the narcotics user. In addition the society must bear the cost of thousands of lives wasted and destroyed because of drug addiction.

Mr. Chairman, only when local resources—be they public or private—are supplemented with Federal assistance will this problem be attacked successfully. Congress acted with prudence and foresight when it passed the Narcotics Addiction Rehabilitation Act, and authorized 15 million dollars for rehabilitation programs in States and municipalities. This sum is insufficient for any major assault on drug addiction. But it will at least enable us to begin meeting the challenge that this problem presents. For Congress to appropriate anything less would reduce to token significance the bold efforts being made in New York City and in other cities and States throughout the country. Such efforts should not, and must not, be discouraged. I urge this Committee to do all it can to see that the full 15 million dollars authorized by law is in fact appropriated.

NARCOTIC ADDICT REHABILITATION ACT OF 1966

Senator HILL. I shall place in the hearings the letter to our chairman, Senator Hayden, of Arizona, from the Community Service Society of New York City, urging a more adequate allowance of funds under the authority in title IV of the act.

(The letter follows:)

COMMUNITY SERVICE SOCIETY,
DEPARTMENT OF PUBLIC AFFAIRS,
New York, N.Y., January 18, 1967.

Re Public Law 89-793.

HON. CARL HAYDEN,
Chairman, Committee on Appropriations,
U.S. Senate, Washington, D.C.

DEAR SENATOR HAYDEN: We urge the immediate appropriation of funds authorized by the "Narcotic Addict Rehabilitation Act of 1966" (Public Law 89-793). The funding of Title IV Section 402 as interpreted by the Conference Report No. 2316 (to accompany H.R. 9167) authorizes 15 million dollars for "each of 2 fiscal years." Section 402a(1) of the Act enables the Surgeon General, Public Health Service to make grants to States, subdivisions, private organizations and institutions.

The urgency of the problem of narcotic addiction in New York State is well documented. One half of the narcotic addicts in the nation reside in the State and by far the highest incidence in New York City. It is deplorable that over six months of the current fiscal year have passed and that vitally needed funds have not yet been appropriated to benefit New York and other States with high rates of narcotics addiction. Each day of delay adds to the tragic waste of human beings and to the crime in our cities and towns.

The Community Service Society, founded in 1848, is the oldest voluntary family welfare agency in the country. The problem of narcotic addiction has been studied by the Society since 1950 and through the years we have pressed for comprehensive treatment and aftercare services for addiction. The Committee on Youth and Correction is composed of informed lay citizens who work toward the adoption of measures for the improvement of social conditions.

The 89th Congress is to be commended on the enactment of legislation to rehabilitate individuals afflicted by narcotics addiction. The immediate appropriation of funds by the 90th Congress will be a significant contribution toward the solution of this grave social problem.

Sincerely yours,

ROBERT S. POTTER,
Chairman, Committee on Youth and Correction.

cc: Members of the Committee on Appropriations of the United States Senate: John W. Gardner, Secretary HEW; William H. Stewart, M.D., Surgeon General, Public Health Service; Nelson A. Rockefeller, Governor of New York; Lawrence W. Pierce, Chairman, Narcotic Addiction Control Commission; Jacob K. Javits, Robert F. Kennedy, Senators, New York; Efrén Ramirez, M.D., Narcotics Coordinator of the City of New York.

STATEMENT OF DR. ROBERT C. BERSON, EXECUTIVE DIRECTOR, ASSOCIATION OF AMERICAN MEDICAL COLLEGES

PREPARED STATEMENT

Senator HILL. Now, Dr. Berson. Doctor, we are glad to have you back, sir.

Dr. BERSON. Mr. Chairman, thank you.

Mr. Chairman, my name is Dr. Robert Berson. I am executive director of the Association of American Medical Colleges, which, as you know, represents all of the established medical schools and the 14 developing medical schools in this country.

I have given Mr. Downey a prepared statement.

Senator HILL. We will have that appear in full in the record.

Dr. BERSON. Thank you, sir.

(The statement follows:)

Mr. Chairman and members of the Committee, first, let me express my appreciation for this opportunity to testify before your Committee. I would like to make a general verbal statement and submit additional material which we hope may be included in the records of these hearings but which in the interest of the Committee's time will not be read.

My name is Dr. Robert C. Berson. I am the Executive Director of the Association of American Medical Colleges. The Association of American Medical Colleges represents the 88 established and 14 developing medical schools in the United States. As their spokesman, the testimony I will present is derived from direct conversations as well as written questionnaire responses of the entire institutional membership of the Association of American Medical Colleges.

Mr. Chairman, there are many health-related items in the bill before us which involve specific programs that, in terms of their intrinsic values, fully warrant increases above the amounts voted by the House. You will, no doubt, receive testimony concerning each from those most immediately connected with and knowledgeable about them.

We, ourselves, of our own direct knowledge could well justify to you decided increases in more than a dozen items in the budget. We are, however, well aware of the situation which confronts this Committee. We have some sense of the weight of responsibility you shoulder in this year of strife. We know the realities of the nation's budgetary situation.

Therefore, Mr. Chairman, we shall address ourselves to but three items in this budget. Two of them necessitate increases above the budget and the House appropriation: increases we believe essential inasmuch as the programs they relate to underlie all other undertakings in the field of health. The third item is one for which we seek only restoration of the funds budgeted by the President and which we believe were cut by the House through misunderstanding.

Mr. Chairman, let me say first that we must face up to the hard fact that we do not have enough health manpower to meet the needs of the American people. There are not enough doctors and not enough supporting people. The shortage of physicians is beyond a question the most critical single element in manpower for health service. Although medical schools have increased their capacity to educate physicians and new schools have been created, the increase in the supply is not keeping up with the need. In the light of the growing demands for physicians services, despite the hopeful offsetting factors of increasing productivity by training as yet undefined categories of assistants, it is clear that more physicians of high quality must be trained as quickly as possible. We submit, Mr. Chairman, that the production of these physicians is so important to this country's defense and its strength that the Committee on Appropriations should attach to it the same importance it quite properly assigns items in the budget of the Department of Defense.

Members of this Subcommittee are well aware of the complex of factors each of which is essential to the education of a physician: educational facilities; research facilities; clinical facilities; hospitals; libraries; faculty and salaries; faculty training; medical care service programs and so on.

If our medical schools are to turn out the maximum number of doctors they could and which the Congress has repeatedly said it wants them to do, then Federal funds for each of the functions would have to be increased markedly above the House figures.

But, as I have said, we share your budgetary realism. Therefore we would simply point out to you that two of these items must be increased above the House allowance and above the budget, not to enable us to turn out all the doctors we would like to but because, gentlemen, if these two are not increased, serious damage will be done our existing capabilities. We will not only not go forward, we will go backward. We will not only not stand still but we will have inflicted such damage as could not be overcome for years even if the budgetary flood gates were to be thrown wide open a year or so hence.

The two items to which I refer are, first, the funds for clinical research centers and, secondly, funds for health research facilities including animal care quarters.

Clinical research centers, gentlemen, are the places where the results of the millions spent for research are translated into new and decidedly improved methods of patient care. It is in these units—a very small number of hospital beds in each instance—that the fruits of the laboratory are applied to carefully selected patients in such ways that shortly doctors throughout the country have new methods of saving life and repairing the ravages of disease.

These are crucial instrumentalities of medical education: not just for the student or the faculty but for all doctors everywhere. If they function properly the millions of dollars invested in research are translated into billions of dollars of savings in health care. To cut back on the funds needed to keep these centers going is in effect to waste rather than to save Federal funds.

Yet that is what the budget and the House appropriations would do. The bill before us calls for \$30,443,000 for clinical research centers and that we are told represents an increase of 7% over last year's appropriation. But, gentlemen, these are hospital beds we are talking of and you and I both know what has happened to hospital costs over the last year. They have increased from 20 to 30 percent. And they will increase next year.

Mr. Chairman, I have for submission later, carefully reasoned, conservatively figured, thoroughly documented letters from our schools showing the impact of the proposed budget on their operations. I shall not read them but let me give you a few samples relative to the proposed funding of clinical research centers.

The University of Virginia Medical School says that loss of its anticipated support could result in the non-operation of its center. The University of Cincinnati must have a yearly increase of at least 15 percent for its operation. Georgetown's increased costs necessitate a 25 percent increase. Tulane reports that its program will be in jeopardy. The University of Washington will have to cut back drastically. The University of Missouri reports that reduction or loss of Federal funding will close its unit.

Gentlemen, instead of the \$33,443,000 in this bill we must have at least \$40.5 million. Applications already received from 60 of the 90 clinical research centers show this to be a conservative figure. If the House figure stands it will represent a cut of 25% below what is needed and that, Mr. Chairman, could have crippling effects.

The second item in the bill to which we would direct your attention, gentlemen, is that for the financing of health research facilities.

This Subcommittee well knows what an essential part of medical education such facilities are. Without research facilities for them to work in, a school cannot recruit faculty; without added faculty members, you cannot add students; without students you are without doctors.

This Subcommittee also knows what others in government sometimes seem to forget: that research facilities are an integral part of a medical school building.

We are pleased when the Congress enables us to do our job by appropriating funds for the construction of a classroom and a laboratory for the students, a hospital for our patients, and an office for the professor of internal medicine. But gentlemen, those rooms and those facilities might as well not be built—and often cannot be built—unless funds for the third component are available at the same time and in proportionate amount. We must have educational facilities, research facilities, and medical care facilities at the same time and in the same place or we cannot educate doctors for you. Education, research, and service are the three inseparable components of medical education.

You will recall that, after a very careful study, the Congress authorized 280 million dollars for health research facilities for fiscal 1967, 1968, and 1969. Now we fully realize that a congressional authorization cannot represent a congressional commitment binding on future Congresses. On the other hand, we are sure that you will realize that when, in response to congressional urging, we commit the woefully inadequate funds of our institutions to increasing the number of our students, we must and at the same time do commit funds and enter into contracts to increase our faculties, and to build the educational, research, and service facilities which will be needed. Surely the Congress recognizes its obligation to at least approximate its part of the contract?

Of the \$280 million that was presumably to be available over a three year period, \$50 million was appropriated for fiscal 1967. Of this, presumably because of inflation in the construction industry, only \$35 million was released.

The President asked for an additional \$50 million for fiscal 1968 but the House, seeing the \$15 million carryover, appropriated only \$35 million.

Mr. Chairman, this would mean that only \$85 million of the authorized \$280 million would be available during the first two years and a staggering \$195 million would be backed up for the third year.

I would like to try to impress three points on you in this connection.

First: There is already a backlog of approved but unfunded applications totalling \$60 million and 118 letters of intent totalling an additional \$92 million. Obviously far more than \$100 million of Federal funds could be used for this purpose in fiscal 1968.

Secondly, I would point out to those who may be swayed by considerations of inflationary prices in the construction industry, that these funds must be matched by the recipient medical schools. There is not a medical school in the country that does not have financial problems. The Congress can rest assured that our

Boards of Regents and our trustees who struggle to raise their half of the funds will never commit them to building these facilities unless either there is no major inflationary impact in their area or the construction is absolutely vital to the maintenance of the institution. On this score neither the Congress nor the Administration need have any fears.

As my third point, Mr. Chairman, I would remind the Committee that this Congress overwhelmingly enacted legislation setting new and expensive standards for the care of animals whose availability is essential to the operation of a medical school. Funds to bring animal care quarters up to the standards now fixed by the Federal government must, for the most part, come from these same health research facility funds—again, of course, matched by the institutions.

Our medical schools welcomed the passage of the animal care act. Only healthy and well-cared-for animals are appropriate to our essential work of research and training.

When the Congress passed the animal care act it had been advised on many occasions that by so doing it would either be obligating itself to pay the Federal share of the increased costs or inviting the cutting back or the closing of schools of medicine. Yet neither the budget nor the House appropriation reflect any awareness of this situation.

Our conservative estimates indicate a need for Federal funding of animal care quarters amounting to \$20 million a year for each of five years.

Gentlemen, for what we hope are the persuasive reasons given, we most seriously urge you to increase the appropriation for health research facilities to \$100 million for fiscal 1968 and to add to that the sum of \$20 million for the construction, renovation, or remodeling of animal care facilities in our institutions.

Now, in conclusion, Mr. Chairman, I would turn to the third point in the budget to which we shall limit our comments—the provisions relating to medical school scholarships.

In this instance we do not contend, as we have with respect to clinical centers and research facilities, that failure to appropriate the funds we recommend will have a serious impact on the ability of our schools to function and will markedly curtail our potential output of doctors. We do maintain, however, that failure to restore the \$1 million cut from the President's budget will frustrate a clearly expressed demand by our people as expressed through the Congress. That is the demand that we open the halls of medicine to the best and most able of our young people without regard to the abilities of their families to pay for the most expensive course of education in America.

We would also suggest that in cutting this \$1 million the House inadvertently overlooked the greatly different role that scholarships play in a school of medicine than they do in other branches of higher education.

As you know, Mr. Chairman and members of the Committee, students of medicine comes to us after they have already completed four years of university work. Many have struggled with outside jobs and many have already accrued burdensome debts. All are confronted with still another four years of very demanding work and then must look forward to a woefully underpaid few years of internship and residency.

We have read with interest the House Committee's feeling with respect to all of higher education, that more reliance be played on work-study opportunities and on loans and less on scholarships.

We can well understand this feeling but, Mr. Chairman, *not* when applied to the students in a school of medicine. For these students we must make a conscious effort to forbid their doing too much extracurricular work and to forbid their borrowing overly much. The first would result in failure and a waste of all that had been invested in a very expensive education to that point. The second would result in a situation most decidedly adverse to the public interest.

You and your colleagues, Mr. Chairman, will well understand why it would be inimical to the public interest if we were to turn out men licensed to practice medicine and surgery who, when they entered private practice, had great burdensome debts hanging over their heads and their young families. We must not graduate students owing so much that they are forced to go where the practice is most lucrative. We must certainly not create a drive which might lead toward using professional knowledge in a mercenary search for the most lucrative returns.

That is one most important reason for asking that scholarship funds up to the budgeted figure be restored. The second—equally important—is because we need these scholarships if we are to attract into medicine bright young men and

women from families of low income. And that, gentlemen, is something we very much want to do. We need doctors of medicine to whom the poor and the lowly are not a strange and mysterious and difficult-to-understand people. We need physicians whose own roots are deep within those areas of our great country which are both most in need of medical care and least attractive to the practitioner born into a well-to-do milieu. We need scholarships to make it possible for those we need in medicine to study medicine. We need scholarships to guarantee that the best of those wanting to practice medicine are not prevented from so doing because of lack of funds.

This point is made very well, I believe, in the following excerpt from a letter written by the dean at the University of Southern California's School of Medicine. Pointing out that this year's scholarship grant had funded 11 students, the letter says, and I quote:

"Although competition among the applicant pool is vigorous, and we would not have any difficulty filling our freshman class, the conclusion is inescapable that the 11 students funded were preferable to those 11 who would have filled their positions, had those first selected been forced by financial considerations to decline our offer of an acceptance. It therefore follows that, should Congress fail to appropriate funds for the implementation of the Act, our school would be forced to lower its admission standards and those students already here who had been led to believe they could count on such funds would be seriously compromised."

Mr. Chairman, those are the three items the Association of American Medical Colleges, conscious of your responsibilities and aware of the necessity of setting rigorous limitations on and priorities in this year's budget, earnestly asks you to increase.

For clinical research facilities \$40.5 million is essential.

For health research facilities \$120 million is essential.

For scholarships in schools of medicine the President's request should be granted.

In behalf of the Association, I thank you Mr. Chairman and gentlemen.

I have with me letters from many of our schools in which each sets forth the meaning of the proposed budget to its operations. Our testimony has of necessity been in general terms. I believe each Senator may well be interested in learning how our generalizations translate into the specifics applicable to the institutions which provide his constituents with the doctors they depend upon. If you agree, Sir, I would ask that the letters be set forth in the record of these hearings following our presentation.

HEALTH MANPOWER FACILITY

Dr. BERSON. With your permission, I would like simply to emphasize some of the points that are contained in that statement.

Senator HILL. All right, sir.

Dr. BERSON. In the beginning, listening to the testimony this morning, some pretty convincing statements were made about the need for full-time positions in pulmonary diseases and in rehabilitation in radiology, actually, in other settings, very convincing statements of needs and for more physicians in almost every field, particularly family practice, are made all the time.

An overriding fact that we face is that we do not have enough health manpower to meet the needs of this Nation. There are not enough doctors and there are not enough supporting people.

PHYSICIAN TRAINING

The shortages of physicians is, in my opinion, beyond a question the most critical single element in manpower for health services. Although medical schools have increased their capacity to educate physicians and new schools are being developed, the increase in supply is not keeping up with the demand. We have got to do a great deal more about it than we have been able to do up to now.

The association and its member medical schools could present detailed evidence on many specific needs that we think are somewhat undermet in this appropriation, but as you have done this morning, you are going to hear from people very close to those specific things, so our statement is, in general, we are convinced there are a number of specific items that could well use more money. We want to invite your particular attention to those things that affect the institutions as a whole, threaten our capacity to even continue to produce physicians at the present rate, much less to expand as we need to do in the future.

SERIOUS PROBLEMS PRESENTED BY HOUSE ALLOWANCES

CLINICAL RESEARCH CENTERS

There are two aspects of this appropriation as recommended by the House that present very serious problems in this area. One is the clinical research centers. As you know, the Congress authorized a good bit more money than has been appropriated in each of the years so far. Now the House is recommending a much smaller amount. The point here is that in expanding a medical school, or developing a medical school, you have got to have research facilities for the faculty. Many of the buildings that are built in medical schools are multi-purpose buildings, and with the very small amount that the House has represented, we think we are in very serious trouble to keep on with plans for expansion that are already underway.

ANIMAL CARE FACILITIES

In addition to that, there is a new requirement for animal-care facilities. The Congress passed legislation, which we welcome. It will lead to better care for animals, and this is very sound. But it will be quite expensive for the institutions to create them. The House committee report mentions \$2 million in the appropriation related to the primate centers. Our best judgment is that it is going to cost \$100 million over a period of about 5 years to upgrade the animal care facilities that are needed.

HEALTH RESEARCH FACILITIES

At the present time the health research facilities program is the best bet. This program has created some facilities in the past, it can in the future. We feel very strongly that it is in the public interest for the Senate to appropriate the full amount authorized for the construction of health research facilities. We know it is needed, and will be quickly used.

CLINICAL RESEARCH CENTERS

The second big area is the clinical research centers. These 90-odd centers are located not all in academic medical centers, but most of them. They are proving to be very successful. They have become an integral part of the educational setting. Most of their costs are tied to hospital costs, and hospital costs are going up at a rapid rate. The projections of how much it will cost to continue operating all of these centers at the same level, not to expand them, not to create an additional ones, is that it will take just over \$40 million. The House has recommended \$30 million.

Now if the institutions have to get along with that much less money, when costs have risen, this means a cutback in the program of very substantial amount. We don't think this is in the public interest. We strongly urge that you appropriate the \$40 million which is needed.

HEALTH STUDENT SCHOLARSHIPS AND ASSISTANCE

Now the House made one reduction that seems relatively small. We think it was an oversight, and it should be corrected. This is in relation to scholarships for students in the health professions. In their report they spoke of a wish to emphasize work-study programs, loan programs. We think this is fine, at the level of college. But that it is not appropriate in professional school. The students who come to professional school and need a scholarship have needed it all along. They have worked, they have borrowed money; and we do not think it is compatible with the professional education to hold a part-time job that will earn much money. This would result in failure in medical school, or the other professional schools. We don't think it is in the public interest for a young physician to graduate so deeply in debt that he has to give the first priority to where can he find the most lucrative opportunity immediately. We think that it is all right for them to owe some money, but, for example, one of our institutions has adopted a policy they won't graduate the medical student owing more than \$4,000. It has stretched their resources to get enough loan funds, to get enough scholarship funds to prevent that, but they don't think it is in the public interest to do that.

So we would strongly urge that the Senate restore the full amount authorized for the scholarship portion of the health professions educational assistance amendments.

Let me repeat the fact that we think that a number of specific programs fully justify increased expenses, and in fact, some of the people who will testify before you, as some of those this morning, highly respected members of the medical schools faculties.

Senator HILL. That is correct.

Dr. BERSON. But let me mention a very serious concern. Actually, at this time when we need to greatly expand the enrollment of medical schools, we know that your committee can do little about that, because of the limited authorization that is built into the present legislation. We think the full amount authorized for the health professions educational assistance amendments should be appropriated. But I want to point out that even so, and with everything else the medical schools are now doing, it is not nearly enough. When it is appropriate to reconsider the health professions educational assistance amendments, I think we need to consider a very marked increase, just as every medical school now needs to consider what can they do, what would it take for them to markedly expand their enrollment, and how can we create a good many more medical schools. At the moment, every medical school in the country is in some sort of financial trouble, from rising costs and rising demands. Some of them are in serious trouble. But they fully mean to meet their responsibilities to the public, if they can just possibly get the resources to do so.

MEDICAL SCHOOL LETTERS

Now, Senator, we would be happy to provide you and your committee with any sort of detailed information you would like. I have here a stack of letters from many of the medical schools, presenting their needs for appropriations, and I wonder if you would like to read them, or to include them in the record.

Senator HILL. We would be happy to include them in the record, which would mean I would read them.

Dr. BERSON. Fine.

Some of them are very interesting and convincing.

Senator HILL. If you want to, you Xerox them and send us Xerox copies, and then we will include them in the record, you see.

Dr. BERSON. I will do so.

Senator HILL. I think that would be a mighty good thing to do. Then they will be available for my reading and I will read them.

Dr. BERSON. Thank you, sir.

Senator HILL. Thank you. You always bring us a good statement, and we appreciate it, Doctor.

Dr. BERSON. Thank you very much.

Senator HILL. Thank you very much. You send us copies of those letters, and we will put them in the record at this point.

Dr. BERSON. Fine. I will send them right over.

Senator HILL. Thank you very much; thank you, sir.

Dr. BERSON. Thank you.

(The material is on file with the committee.)

STATEMENTS OF DR. EDGAR FULLER, EXECUTIVE SECRETARY, COUNCIL OF CHIEF STATE SCHOOL OFFICERS; DR. JOHN M. LUMLEY, DIRECTOR, DIVISION OF FEDERAL RELATIONS OF THE NATIONAL EDUCATION ASSOCIATION; AND DR. ROBERT H. KENNEDY, AMERICAN COLLEGE OF SURGEONS

FUNDS FOR MATERNAL AND CHILD HEALTH AND CRIPPLED CHILDREN

Senator HILL. I have received from Senator Ellender, of Louisiana, a letter to him from the State health officer, Dr. Andrew Hedmeg, of Louisiana, in which the doctor urges the approval of the Senate of the full amount authorized for the maternal and child health and crippled children programs.

(The letter referred to follows:)

LOUISIANA STATE BOARD OF HEALTH,
New Orleans, La., March 9, 1967.

Hon. ALLEN J. ELLENDER,
U.S. Senate,
Washington, D.C.

DEAR SENATOR ELLENDER: I am sure that you will agree with me that the most sensitive section of our population is the children. You are also aware of the fact that the Louisiana State Board of Health has been operating successful programs in Maternal and Child Health and Crippled Children for a long number of years.

In recognition of the needs for children, Public Law 89-97, Title II, Sections 201 and 202 provided for regular annual increases in the appropriations to 1970 through the Children's Bureau. However, for some reason the increases for the

fiscal year of 1967-68 were not provided for in the President's budget. This coming year, however, will be the most critical year we have faced financially in relation to these programs due to the fact that hospitalization for children will be increased by 50% beginning July 1, 1967, payments to orthopedists, pediatricians, plastic surgeons, etc., were increased since last month, the cost of braces and appliances were increased recently, and altogether the Crippled Children's program alone faces a deficit of two hundred and fifty thousand dollars for the next fiscal year. If the normal increase in the Crippled Children's budget proceeded as provided for in Section 202 of the above mentioned law, our deficit would be only one hundred and fifty thousand dollars, and we would hope to obtain the latter amount from the next session of the State legislature.

Similar financial problems are staring us in the face for other facets of the Mothers and Children's programs if Section 201 of the above cited law will also not be increased.

I would appreciate very much, and I am sure the people of the state would also, if you would do whatever you could to have these increases as provided by the Law, to be placed in the budget for the fiscal year 1967-68.

Sincerely yours,

ANDREW HEDMEG, M.D., M.P.H.,
State Health Officer.

PREPARED STATEMENTS

Senator HILL. Dr. Edgar Fuller.

Dr. FULLER. Mr. Chairman.

Senator HILL. Did you have some other witnesses you wanted to accompany you?

Dr. FULLER. There are other educational witnesses there.

Senator HILL. Dr. Lumley and Dr. Kennedy? Are they here with us?

Dr. LUMLEY. I am here, Senator.

Senator HILL. Do you want to come around?

Dr. LUMLEY. Yes, I would be very happy to. You have our statement.

Senator HILL. Yes. it will appear in full in the record. I just thought you would like to be here.

Dr. LUMLEY. Fine.

Senator HILL. Is Dr. Kennedy here? Would you like to come around, Doctor?

Senator HILL. You have submitted your statement, haven't you, Doctor?

Dr. KENNEDY. Yes, sir.

Senator HILL. Fine. Thank you, sir.

All right, Dr. Fuller.

REPRESENTATIVE OF COUNCIL OF CHIEF STATE SCHOOL OFFICERS

Dr. FULLER. I have a short statement, and I will elaborate on it a little.

My name is Edgar Fuller. I am executive secretary of the Council of Chief State School Officers, and I am appearing before you today on behalf of those responsible State administrators of education.

I just spent 3 days with the membership of the council, with 49 States out of 50 represented, and they unanimously expressed their concern about the proposed appropriation for title III of the National Defense Education Act for fiscal year 1968, and also other appropriations. I want to talk here more about a special problem that faces the State departments of education that some people would call a can of worms, and other people would call a nest of worms. I don't know just what the difference is, but I know it is something like both.

We believe that the title III appropriation provisions recommended by the Bureau of the Budget and passed by the House fail to take into account the educational needs and conditions necessary for effective administration at the State and local levels where education is operated.

Title III of the NDEA—Public Law 85-864, as amended—authorizes two programs for the improvement of instruction. Part A, under which an annual expenditure of \$110 million is authorized, provides funds which are matched by State and local school systems on a 50-50 basis for the purchase of instructional equipment and materials. The subjects covered are science, mathematics, modern foreign languages, history, geography, English, civics, reading, economics, and industrial arts.

Part B, which has an annual authorization of \$10 million, provides administrative funds and funds for the employment of subject matter specialists, at the State level, to improve instruction in these 10 subjects.

The annual appropriations for both parts of title III I have listed here.

Senator HILL. We have them here. They will appear in full in the record.

REDUCED BUDGET REQUESTS FOR TITLE III

Dr. FULLER. The administration's budget for fiscal year 1968 proposed a reduction in the title III-A appropriation from \$79.2 million to \$47 million, a cut of \$32.2 million. This is a reduction of about 41 percent as compared to last year's appropriation, or about 56 percent as compared to the authorization of \$110 million.

An appropriation for part B of \$2 million was requested to pay State administration costs, but no funds at all for the State instructional supervision program were requested; instead, the Congress was asked to increase the appropriation for title V of the Elementary and Secondary Education Act of 1967 by \$5.5 million, that same amount. These two State and local categorical programs have their own administrative tracks. Both involve administrative decisions in Washington as well as in the States and locally. Authorizations and appropriations have seldom been enacted in Washington until some months after the end of the current fiscal year, and these shifts of funds have damaged both programs. We need to be helped out of a situation in which the same State educational officials are involved in administering both of these two categorical aid programs.

RECOMMENDED FUNDING INCREASE

PART A OF TITLE III

We urge that the Senate appropriate \$110 million, as authorized, or at the very least \$79.2 million amount available this year for part A of title III, and \$7.5 million for part B. The chief State school officers voted unanimously last Saturday that ESEA title V should be funded for fiscal year 1968 at its authorized \$65 million, free from little dramas robbing Peter to pay Paul and crippling both in the process.

The proposed cut in funds for part A of title III was recommended in spite of continued and often urgent need for the equipment and supervisory leadership provided, and in spite of the acknowledged success of the program for 8 years. The States have worked a long time to develop the matching funds required, some for several years. Almost as soon as they achieve success, the fiscal moves made in Washington appear to seek its undoing.

Title III of NDEA has become entirely practicable to administer as it operates today. Its benefits extend to large numbers of students in all major areas of the curriculum, and it is a successful working partnership of local, State, and Federal funds and personnel for the improvement of education. A very large price has been paid to bring it to its present state of efficiency. Because of the complexities of State and local educational planning and budgeting, and the necessity of appropriating matching funds at the State and local levels, it takes much time for national educational programs to reach full effectiveness in the many thousands of school districts which must be involved. Only in recent years have the school systems succeeded in getting State and local legislatures and school boards committed that make it possible to use the entire available title III funds.

STATE AND CITY PROGRAM PARTICIPATION

There is no question as to the need for the program, in view of the extent to which the State and local agencies have used the title III funds. In fiscal year 1966, 36 States reported that they could have used a total of \$22 million more than was appropriated.

Individual large cities demonstrate comparable needs. In the East, for example, Philadelphia spent \$685,113 on equipment and materials—Federal and local matching money—but the State department of public instruction had to return to the city approval projects totaling \$600,000 for lack of Federal matching funds. In the Middle West, the Wisconsin Department of Education could reimburse approvable projects submitted by Milwaukee only at a 44-percent rate. And in the West, the city of San Diego requested \$276,539 in Federal matching funds for approved projects, but received only \$69,531.

States and school systems have been encouraged to do long-range planning under NDEA title III, which is now going down the drain unless this situation can be straightened out.

INDUSTRIAL ARTS PROGRAM

The industrial arts program will not go into effect for another week, and yet the amount of money appropriated under title III to run this additional program is not only nil, but it is a minus \$32 million.

I am going to just state to you now precisely, and away from the copy, Senator, what the problem is. The problem is that the \$5.5 million transferred to title V of the ESEA arrives in a State as only 85 percent of that amount, that the State agencies had \$5.5 million, plus \$5.5 million matching from the State. That was \$11 million for this NDEA program. Now the State matching is no longer legally required, so the part of the program that was attacked may have eliminated the State funds as well as the Federal funds. In any event,

when the \$5.5 million gets over there to title V of ESEA, there is a Federal set-aside of 15 percent under section 505, leaving 85 percent.

That places all of the States, and this is unanimously the opinion, in a very difficult situation.

TITLE V

I realize other people are here, and I am very sensitive about time. Title V should be funded at the authorized \$65 million on its own merits and under its own authorization without wrecking both it and another successful program through the appropriation process. ESEA title V as passed by the House on May 24 is effective for strengthening State and local effectiveness in education, and this in turn strengthens State and local autonomy.

What we would like to have done, if it is at all possible to work it out, is to have the appropriation made without transfers of funds from one categorical aid program to another categorical aid program, and made according to the needs of each program. Then the State and local personnel now seeking other positions on account of the reduction of funds for title III of NDEA, down to below \$4.5 million, may not actually leave.

It isn't quite right to switch funds in certain ways that cripple the States, through Federal action that never came out in a bill authorizing anything, but came out through the appropriation tract. It was insisted upon, I understand, by the Bureau of the Budget. It was not the fault of our friends in the Office of Education, who understood what was happening, but the chief State school officers of these United States want to protest this kind of operation which wrecks a program just as it is getting well underway, and takes away the resources to continue to operate that program at the State level.

I appreciate being here very much, Senator. I am sorry that I can't be more detailed because time is so short.

Senator HILL. We appreciate your statement very much.

As you know, I was very much interested in the Defense Education Act. We introduced that act in 1958, and passed it at that time.

Dr. FULLER. That is right.

(Dr. Fuller's prepared statement follows:)

Mr. Chairman and members of the Subcommittee, my name is Edgar Fuller. I am executive secretary of the Council of Chief State School Officers, and I am appearing before you today on behalf of the members who are the official state heads of education in each state and outlying area of the country. They unanimously expressed their concern, in a meeting in which every state but one was represented last week, about the proposed appropriation for Title III of the National Defense Education Act for FY 1968 and other appropriations for that year. We will also deal with ESEA Title V today, since it is involved in a transfer of funds from Titles III and X of the NDEA.

I appreciate the opportunity to discuss this problem with you and to seek your assistance on behalf of the state administrators and local consumers of education. We believe that the NDEA Title III appropriation provisions recommended by the Bureau of the Budget and passed by the House fail to take into account the educational needs and conditions necessary for effective administration at the state and local levels.

Title III of NDEA (Public Law 85-864, as amended) authorizes two programs for the improvement of instruction. Part A, under which an annual expenditure of \$110 million is authorized, provides funds which are matched by state and local school systems on a 50-50 basis for the purchase of instructional equipment and materials. The subjects covered are science, mathematics, modern foreign languages, history, geography, English, civics, reading, economics and industrial arts.

Part B, which has an annual authorization of \$10 million, provides administrative funds and funds for the employment of subject matter specialists, at the state level, to improve instruction in these ten subjects.

The annual appropriations for both parts of Title III over the life of this Act have been as follows:

Appropriations for title III, NDEA

[In millions]

Fiscal year	Part A	Part B
1959	49.28	1.35
1960	52.8	4.0
1961	47.52	3.75
1962	47.52	3.75
1963	47.52	3.75
1964	61.6	5.0
1965	70.4	5.2
1966	79.2	7.5
1967	79.2	7.5

The Administration's budget for fiscal year 1968 proposed a reduction in the Title III-A appropriation from \$79.2 million to \$47 million, a cut of \$32.2 million. This is a reduction of about 41% as compared to last year's appropriation, or about 56% as compared to the authorization of \$110 million.

An appropriation of \$2 million for Part B was requested to pay state administration costs, but the normal \$5.5 million for the state instructional supervision program was omitted. Instead, the Congress was asked to increase the appropriation for Title V of the Elementary and Secondary Education Act by \$5.5 million. NDEA Title III and ESEA Title V are state and local categorical programs with separate federally defined administrative tracks. Both require administrative decisions in Washington and also in the states and locally after all appropriations have been enacted and allocated in Washington, which is usually some months after the end of the current fiscal year. The changes in appropriations enacted in the House on May 25 have damaged both programs.

When the federal \$5.5 million arrives in the Title V budget, it is to be further reduced by the 15% "set aside" of Title V for regional projects to be approved by the U.S. Office of Education.

The Council urges that the Senate appropriate \$110 million, authorized, or at the very least the \$79.2 million available this year, to local schools for materials and equipment under Part A of NDEA Title III, and \$7.5 million for Part B. The chief state school officers also voted unanimously last Saturday that ESEA Title V should be funded for FY 1968 at its authorized \$65,000,000 amount, which would make unnecessary little dramas robbing Peter to pay Paul and crippling both programs in the process.

The proposed cut in funds for Part A of NDEA Title III was recommended in spite of continued and often urgent need for the equipment and supervisory leadership provided, and in spite of the acknowledged success of the program thus far. The states have worked a long time to develop the matching funds required, some for several years. Almost as soon as they have achieved success, the moves made in Washington appear to undermine their accomplishments.

Title III of NDEA has become entirely practicable to administer as it operates today. Its benefits extend to large numbers of students in all major areas of the curriculum, and it is a successful working partnership of local, state and federal funds and personnel for the improvement of education. A very large price has been paid to bring it to its present state of efficiency. Because of the complexities of state and local educational planning and budgeting, and the necessity of appropriating matching funds at the state and local levels, it takes much time for national educational programs to reach full effectiveness in the many thousands of school districts which must be involved. Only in recent years have the school systems succeeded in getting state and local legislatures and school boards committed to make it possible to use the entire available Title III funds.

There is no question as to the need for the program, in view of the extent to which the state and local agencies have used the Title III funds. In fiscal year 1966, 36 states reported that they could have used a total of \$22 million more than was appropriated.

Individual large cities demonstrate comparable needs. In the East, for example, Philadelphia spent \$685,113 on equipment and materials (federal and local matching money), but the State Department of Public Instruction had to return to the city approvable projects totaling \$600,000 for lack of federal matching funds. In the Middle West, the Wisconsin Department of Education could reimburse approvable projects submitted by Milwaukee only at a 44% rate. And in the West, the city of San Diego requested \$276,539 in federal matching funds for approved projects, but received only \$69,531.

States and school systems have been encouraged to do long-range planning under NDEA Title III. As a result, school systems all over the country have embarked upon instructional improvement plans which are based upon the continued availability of NDEA funds. If the funds are cut, it is obvious that either these long-range programs will have to be cut back, or funds will have to be sought from other sources.

Under an amendment passed by the Congress last year, the subject category of industrial arts will become eligible for Title III support on July 1 of this year. Industrial arts equipment is relatively expensive and the subject is very widely taught, so that a substantial amount of additional funds will be needed to meet the requirements of this subject. But as indicated above, the state and local school systems have been using all of the available funds in the nine subject areas which were previously covered by the Act, and have been in need of substantially more funds for these subject areas alone.

NDEA PART B—SUPERVISION AND ADMINISTRATION UNDER TITLE III

The cost of the supervision and administration portion of Part B for the past few years has been \$7.5 million annually. This year, the Administration's budget showed a reduction of \$5.5 million in Part B of Title III and the ESEA Title V budget was increased by this same amount, leaving only \$2 million in NDEA Title III for administration. Although an amount equal to that deleted from the NDEA Title III-B program is proposed for addition to the ESEA Title V program, there is no requirement that the funds will be used for this purpose. It forces the states to support either one program or the other, and may cause loss of state funds now available. State departments would have to submit the requisite Title V applications and specifically list as a part of their Title V projects the staff positions to be filled and the services to be rendered, and the Commissioner would have to approve these applications.

The spirit of NDEA Title III dictates close ties between the acquisition program and the supervisory program. Equipment and materials, of themselves, will not do the whole job of improving instruction; the instructional specialists are of equal or greater importance. Taken together, these two programs have achieved a major improvement in instruction. Obviously, the close ties between the acquisition and supervision programs may be lost unless both NDEA Title III-B and ESEA Title V are adequately funded.

Title V should be funded at \$65,000,000 on its own merits and under its own authorization, without wrecking both it and the Title III program through the possible loss of up to \$6,325,000 in the appropriation process.

Mr. Chairman, I am grateful to you and your colleagues for the privilege of appearing here today. We are indebted to you and to the members of Congress who have made and continue to make fundamentally important contributions to education.

Thank you.

FUNDS FOR TITLE I, HIGHER EDUCATION ACT

Senator HILL. Senator Gale McGee, of Wyoming, has handed me a letter to him from Mr. John W. Gates, director of the Division of Adult Education and Community Service of the University of Wyoming in which support is sought for the allowance of funds authorized under title I of the Higher Education Act of 1965.

(The letter follows:)

THE UNIVERSITY OF WYOMING,
ADULT EDUCATION AND COMMUNITY SERVICE,
Laramie, Wyo., July 3, 1967.

Hon. GALE W. MCGEE,
U.S. Senator,
Senate Office Building,
Washington, D.C.

DEAR SENATOR MCGEE: As you will recall, the booklet we sent you a few months ago contained Federal programs sponsored through our Division and financed under Title I of the Higher Education Act of 1965. These programs have been exceptionally well-received and, we sincerely believe, greatly appreciated by the people of Wyoming.

The appropriation for all the states, territories, etc., was originally \$10 million. Quoting from Page 1 of *Notes and Working Papers Concerning The Administration of Programs Authorized Under Public Law 89-329. The Higher Education Act of 1965 during Fiscal Year 1966, prepared for the Subcommittee on Education*, "Ten million dollars was appropriated for activities under these programs during fiscal year 1966, of which \$9.2 million was allocated to the States, the remaining \$0.8 million being used to defray administrative expenses." Under the formula set up for distribution of these funds, each of the states, etc., received \$100,000 as a flat grant, the balance of the appropriation being distributed to each state according to its percentage of the total population. Thus, using round numbers, if the population of the U.S. is 200 million and that of Wyoming one-third of a million, we received one-sixth of one percent of this balance, \$8,058 for the current year, down from \$8,359 during the first year of the program. Our totals for the years were \$108,359 and \$108,058 respectively.

We would like to call this to your attention since if the appropriation should be increased even to double the \$10 million and the same formula of allotting \$100,000 plus a percentage be applied to Wyoming, the additional amount we would receive would be very slight. You undoubtedly have this matter already in mind and we are writing merely to give you the point of view of our Division, which was asked to administer the program by the University of Wyoming Board of Trustees.

If the appropriation is increased, we would appreciate it very much if you could secure a comparable increase in the base of \$100,000 to a more realistic figure with the percentage allotment being added to this base as under the present formula. We have seen so many reports as to the probable appropriation for Title I (our Division is not concerned with operating programs under Titles II-VII inclusive) that we are hardly in a position to indicate a suggested base for the formula. If the appropriation should be increased to, let us say, \$15 million, then we would consider a minimum base of at least \$130,000 as fair to all concerned. If the final appropriation is well above the \$15 million, it would seem fair to increase this minimum base accordingly.

Our duties brings us to Washington occasionally and we shall be happy to supply you with any information which you will find helpful.

Sincerely yours,

JOHN W. GATES, *Director*.

FUNDS FOR TITLE I, HIGHER EDUCATION ACT

Senator HILL. I have a letter from Senator Wayne Morse, Oregon, enclosing correspondence between him and Mr. Ted Sidor of the Co-operative Extension Service of Oregon State University with certain enclosures. I shall place this material in the hearings for the information and guidance of the committee and of the Senate.

(The material follows:)

U.S. SENATE,
COMMITTEE ON LABOR AND PUBLIC WELFARE,
Washington, D.C., June 13, 1967.

HON. LISTER HILL,
*Chairman, Subcommittee on the Departments of Labor, and Health, Education,
and Welfare, and Related Agencies, Committee on Appropriations, U.S. Senate,
Washington, D.C.*

DEAR MR. CHAIRMAN: As you know, I have earlier expressed to the Appropriations Committee my concern over the underfunding of educational programs.

I have recently received from Mr. Ted Sidor of the Cooperative Extension Service of Oregon State University a most informative letter concerning the operations of Title I Higher Education Act of 1965 programs in my State.

If your hearings record on the 1968 Labor-HEW appropriations bill has not yet been closed, I would very much appreciate your including his letter of June 7, 1967 and the attached description of the Title I proposal for Northeastern Oregon.

With kindest personal regards,
Sincerely,

WAYNE MORSE.

U.S. SENATE,
COMMITTEE ON LABOR AND PUBLIC WELFARE,
Washington, D.C., June 13, 1967.

MR. TED SIDOR,
*Resource Development Specialist, Cooperative Extension Service, 330 Extension
Hall, Oregon State University, Corvallis, Oreg.*

DEAR TED: I very much appreciated the material contained in your June 7, 1967 letter and the attachment thereto concerning a Title I Higher Education Act proposal for Northeastern Oregon. It is just such specific information as this which strengthens my presentations both to the Appropriations Committee and to the Senate in floor discussion.

I thought you would like to know that I have asked that your letter and materials you made available to me be brought to my attention for floor use during consideration of the 1968 Labor-HEW appropriations bill. I further asked that a copy of your letter and materials be placed in our legislative oversight files for our use at such a time as the subcommittee reviews the administration of Title I of the Higher Education Act.

Further, I have taken the liberty of bringing the material to the attention of Senator Hill, Chairman of the Labor-HEW subcommittee of the Senate Appropriations Committee for consideration by him and his colleagues during subcommittee and full committee mark-up on the appropriations bill.

With kindest regards,
Sincerely,

WAYNE MORSE.

COOPERATIVE EXTENSION SERVICE,
OREGON STATE UNIVERSITY,
Corvallis, Oreg., June 7, 1967.

Senator WAYNE MORSE,
*Senate Office Building,
Washington, D.C.*

DEAR SENATOR MORSE: This letter is in reference to our conversation concerning projects that the Cooperative Extension Service of Oregon State University now have funded under Title I of the Higher Education Act. The program that we are now following is entitled "Towns and Small Cities Project" The project is now operating in the towns and small cities of Linn, Marion, and Clackamas counties. Two men have been hired to work with the city councils, mayors, and others to assist them in developing governmental and community development procedures that will assist in the overall development of their particular community.

We are working directly with 35 communities, and indirectly with 61, in solving problems, establishing training programs in federal aid assistance, parks and recreation, sewage disposal, municipal planning, water systems, and leadership training.

Specific assistance has been requested, by order of frequency, in federal aid, parks and recreation, sewage disposal, municipal planning, leadership assistance, water, youth employment, legal organizations, housing, business development, community survey, library, community study and urban renewal.

In addition, shortcourses or formal training programs in budgetary procedures, recreation and parks for the small community, and land use planning and zoning have been successfully presented. Plans have also been completed to teach two or three day workshops in leadership training and communications this coming fall.

Although the programs have been operative less than one year, success is measurable in communities that are now building libraries, sewer systems, or are involved in parks and recreational programs. A number of other specific instances could be related where success in community development can be traced directly to the assistance and training provided by this particular program as funded under Title I of the Higher Education Act.

We have, in this area of Linn, Marion, and Clackamas counties established a citizens committee of mayors, county court officials and councilmen to guide the program and designate areas of need. This particular committee has, through local analysis, indicated a need for assistance in solving problems associated with the water, sewage, park and recreation, etc., which have been discussed in the preceding paragraphs.

We have also discovered, and the committee has collaborated our findings, that elected officials have demonstrated the need for training to help them better perform the administrative and other leadership responsibilities of their respective positions. We are also finding that coordination of the diverse agency and group programs underway in the community are needed. These resource agencies and groups have been identified and are now involved in community development programs in these smaller communities.

For example, we are utilizing, where applicable, the services of the State Technical Action Panel of the U.S. Department of Agriculture—Farmer's Home Administration, Soil Conservation Service, Forest Service, Agricultural Stabilization and Conservation Service, Statistical Research Service, Rural Electric Administration, and the Economic Research Service. Also included are the Rural Area Development Agency group—State Department of Employment, Division of Planning and Development, State Department of Education, State Game Commission, State Department of Agriculture, State Department of Forestry, Oregon Fish Commission, State Committee on Natural Resources, State Parks and Recreation Division of the Oregon Highways Department, U.S. Department of Commerce, Economic Development Administration and Small Business Administration. We are also utilizing the services of other organizations, such as, the League of Oregon Cities and the Association of Oregon Counties.

To fulfill the requirements of the Title I Act, that is, to direct the resources of the University to areas that are not now served, we are utilizing the efforts of the Department of Political Science, the Department of Sociology, Department of Agricultural Economics and the Department of Economics, the Bureau of Municipal Research, the Division of Continuing Education, and the Oregon State University Agricultural Experiment Station, in these education efforts to the small towns and cities.

This particular program has been very well received by the executive group of these small towns and cities and is fulfilling a need that has received little attention in the past.

Of importance in any government program is the danger of overlapping activities which sometimes exists when new or different programs are initiated

either on a federal or state level. In this particular case, we are finding the program as financed by the Title I of the Higher Education Act is complementary to a number of programs already in existence. A good example can be made of the Community Action Programs that have been developed in the counties listed. Surveys by C.A.P. personnel, needs for community development and educational procedures, are usually noted by C.A.P. personnel. In many instances the financial and institutional assistance, to alleviate a particular problem existing in the small communities, is nonexistent. C.A.P. directors have been working directly with our Community Development Agents and have asked that we assist in solving problems found in these communities. The solution in most instances becomes one of educational programs to train the people in the areas in which information or expertise are lacking. We find the same type of need demonstrated by a number of other agencies previously listed.

Finally, because of the responses and successes to date of this particular program, it occurs to me that it encompasses a number of the guidelines documented by the President of the United States listed in document Number 88 entitled *Urban—Rural Poverty*, and also in the Secretary of Agriculture's memorandum 1610, *Rural Areas Development*.

The opportunity afforded the small towns and cities under funding provided by Title I of the Higher Education Act is immeasurable. This particular program is demonstrating successes that can be enjoyed when funding is properly employed and programs are developed which solve problems people themselves recognize.

I might indicate that the same type of program has funded and will become operative on July 1, 1967, in the counties of Umatilla, Wallowa, Union, Baker, and Malheur counties. The total cost of the programs in the Willamette Valley and Northeast Oregon is approximately \$56,000 of federal funds.

Additional program material is enclosed for your information.

Very truly yours,

TED SIDOR,

Resource Development Specialist.

WHAT'S GOOD ABOUT JEFFERSON?

(A Community Survey Sponsored by the Jefferson Lions Club in Cooperation With the Jefferson High School Honor Society)

This Community Attitude Survey is being sponsored by the Jefferson Lion's Club in an attempt to gather a concrete sample of public attitudes and opinions about a wide number of subjects which affect the liveability of our city both now and in the future. Hopefully, the information gained from this survey can help determine priorities for future community improvement projects. Your participation is necessary if this project is to be successful.

We hope every adult living within the city will take the time and effort to sit down and go through the survey. DO NOT SIGN YOUR NAME. We do not wish to know who any individual is. What we want is your frank opinions, feelings, and ideas. You may have some ideas and suggestions not covered by the survey. Feel free to write any comments you would like to make in the space provided at the end.

The results of this survey will be tabulated and made available to you and the rest of the community.

It is our hope that this project will prove worthwhile by providing some guidance when decisions on community development are made.

2612 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

Rate the following items

	Excellent	Good	Average	Below average	Poor	No response
LOCAL SERVICES						
1. Water pressure						
2. Water quality (taste and smell)						
3. Fire protection						
4. Fire protection equipment						
5. Law enforcement and police protection						
6. Telephone service						
7. TV and radio reception						
8. Electrical service						
9. Gas service						
10. Postal service and facilities						
11. Banking service and facilities						
12. Court services						
13. Local news coverage						
14. Ambulance service						
15. City library service						
HEALTH AND SAFETY						
16. Garbage and trash collection						
17. Surface water drainage						
18. Sewage collection and treatment						
19. Street layout						
20. Street and road maintenance						
21. Cemetery						
22. Street lighting						
23. Traffic signs and signals						
24. Sidewalks						
25. Aid to families with marital-financial problems						
26. General appearance of homes in the community						
27. Cleanliness of the community						
28. General appearance of the business district						
29. Availability of adequate housing						
30. General family income levels						
31. School health services						
32. Availability of medical and dental care						
33. Parking in the downtown area						
34. Public restrooms						

Rate the following items—Continued

	Excellent	Good	Average	Below average	Poor	No response
EMPLOYMENT						
35. Employment opportunities for youth						
36. Employment opportunities for adults						
37. Local industry						
38. Community growth potential						
BUSINESS						
39. Local service stations						
40. Local stores						
41. Local restaurants						
42. Upkeep of local businesses						
EDUCATION						
43. Grade school facilities						
44. Grade school education program						
45. High school facilities						
46. High school education program						
47. School administration						
48. Vocational education opportunities						
49. Adult education opportunities						
GOVERNMENT						
50. Local government						
51. County government						
52. State government						
53. Condition of public buildings.						
54. City planning and development program						
55. Citizen participation in local affairs						
RECREATION						
56. Recreation opportunities for all ages						
57. Recreation opportunities for children						
58. Recreation opportunities for youth						
59. Recreation opportunities for adults						
60. Recreation opportunities for senior citizens						
61. Parks and picnic areas						
62. Tourist facilities						
63. Fields for outdoor sports						
64. Swimming facilities						
65. Boating facilities						
66. Meeting places for community groups						
67. Community beautification						

Rate the following items—Continued

	Excellent	Good	Average	Below average	Poor	No response
COMMUNITY ORGANIZATIONS						
68. Churches						
69. Youth organizations						
70. Civic organizations						
71. Social organizations						
72. Cooperation between organizations						
73. Do you feel that Jefferson needs a motel.....						Yes No
74. Do you feel that Jefferson needs more sidewalks and curbs.....						Yes No
75. Do you feel that the appearance of the business district needs to be improved.....						Yes No
76. Do you feel that Jefferson needs to have more housing available.....						Yes No
77. Do you feel that Jefferson needs a park.....						Yes No
78. Do you feel that Jefferson needs to have some long-range planning.....						Yes No
79. Do you feel that Jefferson needs a building code.....						Yes No
80. Do you feel that Jefferson needs a doctor.....						Yes No
81. Do you feel that Jefferson needs a dentist.....						Yes No
82. Do you feel that Jefferson needs a drug store.....						Yes No
83. Do you feel that Jefferson needs a clinic or hospital.....						Yes No
84. Do you feel that Jefferson could support a clinic or hospital.....						Yes No
85. Do you feel that Jefferson needs more industry.....						Yes No
86. Do you feel that Jefferson should encourage new business enterprises.....						Yes No
87. Do you feel that the community needs more recreational opportunities for youth.....						Yes No
88. Do you feel that Jefferson needs some low-rent housing for senior citizens.....						Yes No
89. Do you feel that Jefferson needs a good apartment house.....						Yes No
90. Do you feel that Jefferson needs a greater variety of goods for sale.....						Yes No
91. Do you feel that Jefferson is a good place to raise a family.....						Yes No
92. Do you feel that the public library needs more books.....						Yes No
93. Do you feel that the library should be kept open more.....						Yes No
94. Do you feel that Jefferson needs a zoning ordinance.....						Yes No
95. Do you feel that Jefferson needs a sewer system.....						Yes No
96. Do you feel that Jefferson needs better streets.....						Yes No
97. Do you feel that more cooperation between civic-minded citizens is needed.....						Yes No
98. Do you feel that Jefferson needs a planning commission.....						Yes No
99. Do you feel that Jefferson needs more employment opportunities.....						Yes No
100. Do you feel that old dilapidated buildings in the city should be condemned.....						Yes No
101. Are you a registered voter.....						Yes No
102. Do you feel that Jefferson needs to improve its beautification efforts.....						Yes No
103. Do you feel that Jefferson is a progressive community.....						Yes No
104. Do you feel that Jefferson is a friendly community for new residents.....						Yes No
105. Do you feel that the residents of Jefferson are willing to pay their fair share for needed community improvements.....						Yes No
106. How would you like to have Jefferson grow?						
() As a retirement area						
() As a "bedroom" area for Albany and Salem						
() As an industrial area						
() As a farming center						
() Combination of the above						
() Not at all						
107. In your opinion what are the most important things which need to be done to make Jefferson a better place in which to live? (Please rank in order of need.)						
1.....						
2.....						
3.....						
108. In your opinion what is the most important thing which has been done in the past year to make Jefferson a better place in which to live?						
109. In your opinion who are the five or six people in Jefferson who are most influential in deciding whether a community project gets the nod of approval or whether it gets rejected?						
1.....						
2.....						
3.....						
4.....						
5.....						
6.....						

110. I subscribe to the following newspapers: (To be completed *only* by the head of household.)
 () Jefferson Review
 () Albany Democrat-Herald
 () Salem Statesman
 () Salem Capital Journal
 () Other _____
 () None
111. I prefer to shop in:
 () Jefferson
 () Albany
 () Salem
 () Stayton
112. Number of years lived in community?
 _____ Under 1 year
 _____ 1-3 years
 _____ 4-7 years
 _____ 8-15 years
 _____ over 15 years
113. Highest grade completed?
 _____ 8th grade or less
 _____ Some high school
 _____ High school graduate
 _____ Some college
 _____ College graduate
114. I presently
 _____ Rent my home
 _____ Lease my home
 _____ Own my home
115. Members of household? (To be completed by *only* the head of household.)
 _____ Total number
 _____ Children, total
 _____ Under 4 years
 _____ 4-13 years
 _____ 14-15 years
 _____ 18-19 years
 _____ 20-29 years
 _____ 30-39 years
 _____ 40-59 years
 _____ 60 and over
116. Please respond to *JUST ONE* of the following three items.
☐ I am in favor of the construction of a sewage collection and treatment system in Jefferson because:
 _____ Sewers would increase property values.
 _____ Sewage treatment is needed to protect public health.
 _____ We owe it to our neighbors downstream.
 _____ It will never be as cheap as it is now.
 _____ A sewage treatment system would stimulate community growth.
 _____ The State requires that something be done.
 _____ A sewage treatment system would attract desirable industry.
 _____ The government will grant us over \$100,000 if we act soon.
☐ I am opposed to the construction of a sewage collection and treatment system in Jefferson because:
 _____ We can get by a few more years.
 _____ Construction would disrupt traffic.
 _____ The cost is too great.
 _____ The community doesn't need it.
 _____ Everyone in the community should take care of his own sewage.
 _____ The State Sanitary Authority is just "bluffing."
☐ I don't know enough about it to make a decision.
117. Please use this space or any comments, suggestions, ideas that you may have that were not covered on the survey:

TOWNS AND SMALL CITIES

(A Newsletter for Leaders in Small Communities)

LEADERSHIP TRAINING EXPRESSED AS GREATEST NEED FOR SMALL TOWNS

Many people in small communities would provide leadership to community improvement activities if they knew how to go about it.

Arthur Boyts, Mayor of Scotts Mills and a member of the Towns and Small Cities Project Advisory Committee, expressed the above at the recent TASC Advisory Committee meeting. Consensus of the committee was that the Community Development Agents should try to provide some training assistance in leadership.

The March 28 meeting was the first combined meeting of the advisory committee. The purpose of the meeting was to review the activities and accomplishments of the TASC project to date and to obtain directions and comments from the advisory committee regarding assistance which is of greatest need to the small communities.

Additional recommendations made by the committee included (1) expanding the committee to include professionals from other agencies as well as additional representatives from small communities, (2) development of area meetings where mayors and leaders could come together to share problems and ideas.

Both Community Development Agents will direct efforts to fulfillment of the above before the next advisory meeting in late June.

CITY BUDGET SESSION—APRIL 24

A special informational session on budget law and budget procedure has been set for *Monday evening, April 24, at 7:30 p.m., Stayton High School, Stayton*. This special session has been developed to assist small cities with budget preparation problems.

Mr. James Van Galder, Local Budget Officer for the Oregon State Tax Commission; and Mr. Marion Thomas, Oregon State University Economics Specialist; will be on hand to explain and answer questions related to taxation and budgeting.

It is anticipated that the group will be small enough to afford local budget officers and community leaders an opportunity to ask questions pertaining to specific community budget problems.

This session is being developed by the Oregon State Cooperative Extension Service with no charge to participants. Anyone interested is invited.

COMMUNITY DEVELOPMENT PROJECT APPROVED—1967-68

The Oregon State University Cooperative Extension Service has received word from the State Educational Coordinating Council that the Towns and Small Cities Community Development project has been approved for continuance during the 1967-68 fiscal year.

CITIZEN PARTICIPATION PROBLEMS???

Communities having citizen participation problems sometimes hear the following statements.

"People won't come."—"No one is interested."—"I can't do it by myself."—"No use trying—others won't help."—"People don't care."—"Nothing ever happens after we meet."—"Doesn't make any difference what we say—they do it their way anyway."

Sound familiar? Why do people make these comments? Could it be a result of past experiences which they have had in meetings and community gatherings. Think about yourself—remember the last boring meeting you attended or one where no one would listen to you—will you attend again?

In response to the advisory committee's recommendations and experiences of the Community Development Agents, plans are in motion for developing and providing community sessions in leadership training. It is envisioned that these sessions will include techniques in working with groups, suggestions for getting action out of groups, dealing with the observer, sharing leadership, qualities of leadership, how we communicate with others, making group decisions, and providing opportunities for people to practice leadership.

If you are particularly desirous of a program of this type being conducted in your community, contact your Community Development Agent for additional information.

RECREATION WORKSHOP SET

Plans are underway for a workshop on recreation programs for small communities. This workshop has been *tentatively* scheduled for Saturday, May 20, in Stayton.

This educational program is being developed as a result of widespread interest being expressed by leaders in numerous small towns and communities.

Various key resource people in the field of parks and recreation will be on hand to present information and lead discussion on different aspects of local recreation development. Following are several of the areas to be covered on the program.

1. Benefits of a total community recreation program.
2. Methods of local organization for recreation.
3. Available technical and financial assistance.
4. Current trends in recreation and park development.

A detailed agenda for the workshop is being prepared and will be distributed. All local people who are interested in expanding or improving recreation oppor-

tunities in their community are invited to attend this program which is being provided at no cost to the participant. If you are interested in the subject of parks and recreation programs, plan now to attend this session. You may pick up an idea or some information that could be used in your community.

COMMUNITIES IN ACTION

Aurora

The City of Aurora has filed an initial application for a \$2,300 Land and Water Conservation Act matching grant to be used to improve the sanitary facilities in the Aurora city park.

Hubbard

The City of Hubbard, under the leadership of councilman Al Hildebrand, is actively working on the establishment of a local planning commission. Local people are being contacted about serving on the commission and a local planning orientation has been held.

MORE ON TAXES

The March Newsletter contained a breakdown of the composite millage rates for small communities in the tri-county area. However, this breakdown provides only a superficial look at the local tax pictures since millage rates alone do not provide an adequate measure of local government efficiency and effectiveness. These rates are influenced by numerous factors including assessed value of local property, quality of local services, cost of local schools, and major public works projects (sewers, water, streets, schools, etc.).

Taxation is a key issue in Oregon at the present time, and local leaders are continually frustrated with demands for more and better services at less cost to the taxpayer.

WHY TAX?

Taxes provide money for public services to help meet human needs, wants, and expectations. These are needs and wants that the voters and their representatives judge can be supplied through coordinated and controlled group effort better than through individual or private effort. These group or government efforts are specifically and broadly aimed at development and protection of people and property. Included in the public services taxes help to provide are:

Public education.—Beginning and continuing education is available for youth and adults who wish to learn, at little or no direct cost to them. This includes conventional grade schools, high schools, and universities as well as community colleges, vocational schools, research centers, adult classes, and a wide variety of less formal educational activities.

Public transportation.—Highways, roads, streets, and the like are constructed and maintained by public agencies.

Public health and sanitation.—Services in this category include protection against communicable disease through immunization or quarantine at little direct cost to the recipient, provision of water supply and waste disposal systems, pollution control, and hospital and invalid care.

Public welfare.—Special assistance is provided for people who are disabled, disadvantaged or displaced, and for other people who are unable to provide minimum levels of living.

Public recreation.—Provisions are made for developing and maintaining parks and recreation programs.

Protection of property.—Property is protected from damage by vandalism, theft, fire, flood, or encroachment of undesirable uses.

Protection of human rights and liberties.—This is accomplished through the granting of powers and funds for the police, military, and court functions.

Resource conservation and development.—Public power generation, irrigation, flood control, research, erosion control, soil improvements, forest management, and the like are examples of services in this section.

Regulation and promotion of economic growth.—This includes trade and commerce. As time goes by, taxes and fiscal policies are being modified and designed more and more to stabilize and increase employment, incomes, and investments in the private as well as public parts of our economy.

What would our way of life be like without these public services? Would we be better or worse off? Are the services worth what they cost? Do we need to change the mix—have more of some, less of others? These are among questions to ponder as we think about taxes.

CORRECTION

The March Newsletter listed Gladstone's composite net millage rate to be 114.2. A re-examination shows that a more valid millage net rate for the city of Gladstone is 87.2 mills. Our thanks to Mr. Leonard Strobel, Gladstone City Administrator, for pointing this out.

Jefferson

The City of Jefferson has made tentative plans to hold their sewer bond election in late May. Mayor Sutton and his council are now faced with the task of informing the people of Jefferson about the details of their proposed project.

The City of Jefferson is also striving to get their local planning commission established. Local people have been contacted about serving on the commission and an ordinance establishing the commission is being prepared.

Molalla

The Molalla Rotary Club is sponsoring a recreation forum in their city on the evening of April 17. The major purpose of this form is to bring together community leaders from city government, the schools, civic organizations, business organizations, churches, and others for an objective discussion about how recreation opportunities for all ages can be improved in their community. Mr. Tom McBride is providing much of the leadership for this project. Several resource people are being brought in to discuss methods of improving recreation activities and facilities.

COMMUNITY DEVELOPMENT—WHAT IS IT?

The term community development is a popular term which is overused and many times confusing. One way to understand community development is to look at some of its more popular definitions:

The process of acquiring physical installations that would improve local living (homes, streets, schools, churches, water systems, sewage disposal systems, parks, etc.).

The process of providing better services for people (police and fire protection, library services, recreation, social welfare, etc.).

An activity that takes place in a system called a community. This "activity" makes plans, decisions, and assumes initiative for bringing about change which will benefit the majority of the citizens in the community.

An activity which is task oriented. That is, it serves as a job-to-be-done which is chosen to meet a specific need of the community.

An activity which is education oriented. The acquisition of facts and information, extending the information to others to bring about correction or improvement.

These are but a few definitions referred to when professionals speak of community development. The important fact is—the presence or absence of "community development" in a community rests with the community and its people.

* * * * *

This newsletter is a monthly publication of the Towns and Small Cities Project currently being conducted by the Oregon State University Cooperative Extension Service. This project is designed to provide assistance to communities of 5,500 population or less with desired community improvements. Community Development Agents Larry Horyna and Wayne Nierman are assigned to work in Marion, Linn, and Clackamas County. These two agents can be contacted as follows:

Larry Horyna, Room 90, Marion County Courthouse, Salem, Oregon, Phone: 364-4401, Ext. 64.

Wayne Nierman, Extension Office, Linn County Courthouse Annex, Albany, Oregon, Phone: 926-5896.

OREGON STATE UNIVERSITY

COOPERATIVE EXTENSION SERVICE

TITLE I PROPOSAL FOR NORTHEAST OREGON

EASTERN OREGON COLLEGE,
La Grande, Ore., December 28, 1966.

Dr. J. W. SCHEEL,
*Assistant Director, Cooperative Extension Service, Oregon State University,
 Corvallis, Ore.*

DEAR DR. SCHEEL: I have reviewed the program proposal "Community Development in Towns and Small Cities in Northeast Oregon." As you know we have had a continuing interest in this area. We were in the process of preparing a similar proposal under Title I, HEA at the time our research director communicated with you regarding the possibilities of joining forces.

In this area of the state, we see the development of organization and leadership as a critical problem of many of our small communities.

Many of the same community problems—public facilities, unemployment, juvenile behavior, recreation—that are of concern to large population centers, also concern the small towns and cities. The major difference is that the resources for dealing with community problems are more accessible to the citizens of the larger communities.

It is my belief that the combined resources of the Cooperative Extension Services at Oregon State University and Eastern Oregon College can do much to stimulate and develop organizational patterns and leadership that will better enable the citizens to analyze and to effect programs of improvement in the small communities of our area.

I heartily endorse the vigorous pursuit of the objectives outlined in the proposal.

Sincerely yours,

A. M. REMPEL, *President.*

SUMMARY OF OREGON STATE UNIVERSITY COOPERATIVE EXTENSION SERVICE AND
 EASTERN OREGON COLLEGE PROPOSAL UNDER TITLE I OF THE HIGHER EDUCATION
 ACT

PROGRAM TITLE: COMMUNITY DEVELOPMENT IN TOWNS AND SMALL CITIES

This proposal requests Title I funding for a program in five counties of Eastern Oregon. Counties include Baker, Malheur, Umatilla, Union, and Wallowa. Population or audience to be serviced is approximately 33,152 people living in small towns and cities in these counties.

An area agent will be established in La Grande at Eastern Oregon College to provide intensive educational opportunities to groups in towns and small cities. The purpose is to facilitate, stimulate and guide the development of organizations and competent leadership in these communities to enable them to better analyze the local situation and achieve community consensus on a program of action for improvement.

Action programs will be focused on developing local leadership, citizens committees, and problem-solving and action methods that will help towns and small cities identify and deal with such problems as:

- Health and sanitation facilities,
- Business decline,
- Air and water pollution control,
- Local government for shifting population,
- Education, vocational training and recreation for youth,
- The economic and culturally disadvantaged segments of the population,
- Family adjustment and stability,
- Water supply and quality,
- Orderly land use, and
- Adjustment to retirement, old age and reduced income.

The agent assigned to this area will do the following things in each of the towns and small cities within this area:

1. Establish a citizens committee with the concurrence and support of local government.

2. Train committees, city commissions and other groups representative for their leadership roles and responsibilities in local government.

3. Help prepare, conduct and analyze town and small city self-surveys.

4. Help prepare and present pertinent projections from economic and social studies of the larger geographic and political areas in which the town or small city exists.

5. Provide planning and technical assistance to committees, agencies and organizations, as they develop appropriate plans of action and establish priorities.

6. Arrange educational opportunities for appropriate persons in the principles of techniques of (a) community development; and (b) evaluation.

This area was chosen as the second unit of our state-wide proposal because of significant changes occurring in the listed counties. For example, each of these counties have water impoundments under construction, have dams authorized or have governmental units studying water developments for the entire area. Minimum acreage that could be affected by this water development is in excess of 350,000 acres. The counties of Union, Baker, and Wallowa have completed an economic study of their county, but updating and relationships to small towns and cities need clarification. In addition, long-range program planning for resource development by the Oregon State University Extension Service will be completed in the area within three years. Small towns and cities need assistance in becoming a meaningful part of this study effort.

The impact of the above mentioned water development will have a decided effect on the total economic and social structure of the area and of those small towns and cities. Certainly, area wide community development, to take advantage of opportunities, to increase economic and social returns, would be of great value at this time. Most small towns and cities in this area recognize the possibilities but lack the information, coordinating ability and personnel to take advantage of these opportunities. The establishment of a community development agent in this area should have a high benefit-to-cost ratio.

The cooperative effort and joint sponsorship by Oregon State University and Eastern Oregon College was designed to take advantage of the competency available in the institution located in the defined area. Although primary leadership will remain with the Cooperative Extension Service, training programs will be coordinated by the Community Development Agent and Eastern Oregon College.

Interest in the proposal is evidenced by a letter signed by members of governing groups in small towns and cities in the area (exhibit I).

EXHIBIT 1

LA GRANDE, OREG., *December 19, 1967.*

Mr. JEAN SCHEEL,
*Assistant Director, Extension Service,
Oregon State University, Corvallis, Oreg.*

DEAR MR. SCHEEL:

The undersigned city officials from towns of under 5,500 population met tonight and expressed support for an area agent to provide assistance in community development. Assistance is particularly needed in the area of water and sewage problems.

GORDON GRIFFITH,
Councilman, City of North Powder.
HOMER M. CARNES,
Recorder, City of North Powder.
CLAYTON FOX,
Recorder, City of Imbler.
HERMAN O. QUINCHY,
Councilman, City of Imbler.
WAYNE C. FERGUSON,
Mayor, City of Union.
HOWARD L. WALLIS,
Councilman, City of North Powder.

COMMUNITY SERVICE AND CONTINUING EDUCATION
PROGRAM PROPOSAL

Date : December 29, 1966.

Proposal No. _____

For State Agency Use.

Program Title : Community Development in Towns and Small Cities in Northeast Oregon.

Community : Certain designated areas within Northeast Oregon counties.

Community Problem : Organization and leadership.

Cooperating College : Oregon State University and Eastern Oregon College.

Program Coordinator :

Name : J. W. Scheel, Assistant Director.

Address : Cooperative Extension Service, Oregon State University.

Phone No. : 754-2711.

Dates of Program : From July 1, 1967 to June 30, 1968.

Total Federal funds requested..... \$20, 277

Total amount of local funds..... 7, 200

Total amount of program..... 27, 477

Fiscal Officer :

Name : C. G. Weedman, Extension Fiscal Officer.

Address : 118 Extension Hall, Oregon State University, Corvallis, Oregon.

Phone No. : 754-2881.

Official Authorized to Sign :

OREGON STATE UNIVERSITY,

JAMES H. JENSEN,

President.

SUMMARY

This proposal requests Title I funding for an area agent in community development to be established in the counties of Umatilla, Union, Baker, Wallowa and Malheur. This agent will provide intensive educational attention to groups of towns and small cities in the area. The purpose is to facilitate, stimulate, and guide the development of organizations and competent leadership in these communities to enable them to better analyze the local situation and achieve community consensus on a program of action for improvement.

It is apparent that many of the communities for which this service is designed are suffering from business decline, inadequacy of public facilities (such as water supply and sewage disposal), low income and unemployment, and juvenile behavior problems. It also is apparent that these communities have had difficulty in determining how to make use of available programs of assistance, particularly from Federal sources. This proposal envisions extending the resources of Oregon State University, Eastern Oregon College and other elements of the State System of Higher Education and certain cooperating agencies in such a manner as to enable these communities to develop capabilities for identifying and dealing with their priority concerns.

Experience in the Community Development Section of the Lane County Youth Project, the experiences with the first phase of the Title I project and in the county programs of the Cooperative Extension Service in many areas of the State is pertinent to the proposal. From this experience has come knowledge of the type of personnel needed for the task at hand and knowledge of the techniques for involving people of the community in the development of program. The Cooperative Extension Service also has developed effective working relationships with many State and Federal agencies that will be sources of information and assistance on particular community problems.

STATEMENT OF THE COMMUNITY PROBLEM

Small towns and unincorporated communities in Northeast Oregon are faced with many complex problems. The communities in this section of the state are beset with similar problems as expressed by local groups in Clackamas, Marion and Linn Counties, the area now served by the first phase of the O.S.U. Title I program. That is, local committees, through local analysis indicated a need for assistance in solving problems associated with water, sewage, parks and recreation, planning, community studies, housing, business surveys and leadership training assistance.

A significant number of these small towns have been by-passed in this age of rapid socio-economic change. Residents are not sharing in the benefits that have accrued from Oregon's social and economic growth and are unlikely to share in such growth in the future unless their special needs are identified and aggressive programs are carried out to meet these needs.

All counties in the area where these towns and cities are located have water impoundments under construction, have dams authorized or have governmental units studying water development for the area. Minimum acres that could be affected by this water development are in excess of 350,000 acres. The counties of Union, Baker and Wallowa have completed an economic study of their counties, but updating of their conclusions is needed.

The impact of this water development will have a decided effect on the total economy of the area and of these communities. Community bodies say areawide community development to take advantage of opportunities to increase economic returns would be of great value now. Most town and small city bodies are studying the problem, but lack information, coordinating ability and personnel to do an adequate job. The establishment of an Area Community Development Agent in this environment should have a high benefit to cost ratio.

NEED FOR ORGANIZATION AND LEADERSHIP

These small towns generally lack organizational structures and trained leadership to enable them to utilize available resources and services. Elected or appointed officials in small rural communities face a myriad of obstacles in their efforts to attack the forces at work in their areas.

The problems and obstacles small, rural towns face are recognized as a national problem. Secretary of Agriculture Freeman, in a recent memorandum stated: "Rural America is a place which has not benefited from the planning and coordinated community development and industrial growth taking place in urban areas. As a result, rural America is still a place where too many Americans—

- "are unemployed or underemployed,
- "live in substandard homes,
- "have inadequate educational opportunity,
- "lack proper medical service, and
- "do not receive the full benefit of programs which are designed to improve the lot of our citizens."

INADEQUATE RESOURCES

Few rural communities, and few of the small and medium-sized cities in predominantly rural or urbanizing areas, are able in isolation to marshal sufficient physical, human and financial resources to achieve a satisfactory level of social and economic development, even with the help of the many new Federal programs enacted by the Congress during the last five years.

The central advantage of the city has been that a large and concentrated population can provide the leadership and technical capability, and can achieve economies of scale in planning and operations, to provide for its people a variety of highly developed public services and facilities.

The sparseness of population beyond the metropolitan centers makes it impractical for every small hamlet to offer its own complete set of public services adequate to meet the needs of modern society, and it is not economic for a small city to attempt to achieve metropolitan standards of service, opportunities and culture, without cooperating with neighboring communities.

EFFECTS OF NEW TECHNOLOGY

Each small community has its own set of problems that on the surface appear to be distinctive. However, an analysis of the problems shows that there are common threads, or like problems which when categorized provide a frame of reference for community development efforts.

The economy of many small towns in Northeast Oregon is based on the timber industry, the number one income producing industry in the state. Many of the residents have been seasonally employed in the woods, in transporting raw timber and in sawmills and processing plants located in or near town. Mature standing timber supplies have been harvested in many areas to such an extent that competition for remaining raw material has forced the closure of a number of sawmills. This loss of primary employment opportunities sets off a chain

reaction with significant consequences. Mill management leaves the area and a substantial number of local residents become unemployed. The unemployed are forced to make important decisions. Their alternatives are limited since their saleable skills are so closely linked with the timber industry. Those who are immobile remain behind. Their immobility may be self-imposed or involuntary. Often the elderly are unable to move. Businessmen, with heavy capital investments in the community are reluctant to liquidate their assets at a considerable financial loss so they elect to stay. Many workers, unsure about employment opportunities elsewhere, with children in school and strong community ties also remain. These workers and the elderly often receive unemployment compensation for a time and then rely on social security and welfare payments for sustenance.

Agriculture, the second highest income producing industry in Northeast Oregon, is undergoing a rapid change. Farms are becoming larger and the number of farm ownerships is declining. According to a recent report of the Economic Research Service of the USDA, the number of Northeast Oregon farms will decline by approximately 41 percent between 1960 and 1985.

A few years ago farmers purchased their livestock feed, seeds, fertilizers, agricultural chemicals and equipment from merchants in their nearest small town. Now, however, with larger farm ownerships and the financial advantages of quantity and bulk purchasing most large farmers buy the products they need from larger cities.

Mechanization of large farm production and marketing has reduced the number of farm workers formerly required. This is another instance where employment opportunities for residents of small towns have been eliminated or substantially reduced. Referring again to the recent report of the Economic Research Service we find the prediction that farm jobs will decline by 36 percent between 1960 and 1985.

Many farms which provide only limited family income are becoming part time jobs with the heads of households and other family members frequently employed off the farm in non-agricultural fields. Land and capital are not available for these families to increase their holdings and production capabilities. Their limited purchasing and paying power strongly influence the complex situations facing many of our small towns.

CHANGING TRADE PATTERNS

A pattern of growth centers is developing in Northeast Oregon at a fairly rapid rate, much like the pattern in other parts of the United States. For a variety of reasons certain towns and cities are becoming the trade or growth centers in a geographic area. Studies are currently underway in several states to identify growth centers and to ascertain the factors that contribute to this development.

The interstate highway system has contributed immeasurable to the speed and ease with which people and goods can move from one area to another. Goods and services are largely being concentrated in larger cities. Small towns are being by-passed. Residents in small towns with low populations and an accompanying dearth of goods and services go to the growth centers to make their purchases. Local businesses and services are used principally in emergency or short run situations.

WATER POLLUTION

Pollution of Oregon's streams, rivers from raw sewage and effluent from processing plants is of real concern to state leaders. Large cities in the state are actively tackling the problem of sewage disposal and many have installed sewage treatment plants to reduce river pollution to a minimum.

According to the 1964-65 report of the Oregon State Sanitary Authority twenty-four small towns scattered throughout the state need sewerage work projects to support the state's anti-pollution efforts but to date have no projects in progress. Four are located in this proposed area :

Community :	Population
Island City-----	168
North Powder-----	355
Union-----	1, 440
Wallowa-----	800

EFFECTS OF SOCIAL CHANGE

Most public and private schools in large cities have instituted school lunch programs to provide their students with wholesome and nutritious food so badly needed by growing youth. Rural or small town youth are not nearly so fortunate. A recent survey by the Oregon State Department of Education shows that 988 out of 1,303 schools have school lunch programs. The bulk of those without school lunch programs are in small towns and rural areas.

Residents of small towns face other problems which can be termed social rather than technological. Many young residents leave small towns in search of better employment opportunities. The young who remain suffer from a lack of employment, recreation and other services found in larger cities. High school drop out rates in small towns in Oregon are one-third to one-half higher than large cities. Data from some communities in Oregon indicate that juvenile delinquency in rural areas is on the increase, particularly in rural non-farm areas.

Land values in small towns are lower than in the larger growth centers. The low values of land and housing appeals to the immobile and elderly residents and also are a strong attraction for other elderly in low-income brackets to move into the small towns. Other low-income citizens tend to migrate into areas of low rentals. Pockets of poverty result.

In our social systems, whether in small or large towns, residents require so called "basic" services such as good schools for their children, adequate medical services, telephones, electricity, refuse disposal, sewer and water systems. Many of these services in small towns are not on a par with the services available to people living in larger towns and cities. Economic opportunities, cultural opportunities, public facilities, health services and education and training continue to lag in rural or urbanizing areas. Organization and trained leadership is needed to deal with the problem.

PROPOSED PROGRAM

The proposed program will place a technically competent Community Development Agent in this geographic area. The agent assigned to this geographic area will do the following things in each of the small communities within his area:

- Establish a citizens committee with the concurrence and support of local government

- Train committee members and other group representatives for their community leadership roles and responsibilities in local government

- Help prepare, conduct and analyze town and small city self-surveys

- Help prepare and present pertinent projections from economic and social studies of the larger geographic and political areas in which the town/small city exists

- Provide planning and technical assistance to committees, agencies and organizations, as they develop appropriate plans of action and establish priorities

- Arrange educational opportunities for appropriate persons in the principles of techniques of: (a) Community development; and (b) evaluation.

The following academic divisions of Oregon State University and Eastern Oregon College and the State System of Higher Education, have agreed to assist in and become part of the total program effort:

- Department of Political Science at Oregon State University and Eastern Oregon College

- Department of Sociology at Oregon State University and Eastern Oregon College

- Department of Agricultural Economics at Oregon State University and Department of Economics at Eastern Oregon College

- Bureau of Municipal Research and Service at University of Oregon

- Division of Continuing Education, State System of Higher Education

- Oregon State University Agricultural Experiment Station.

Oregon State University is the land-grant institution of higher education in the State of Oregon. As such, one of its major arms reaching out to people over the State is the Cooperative Extension Service (CES). Through this service, in cooperation with Eastern Oregon College, the University will develop training and action programs for economic and social development in towns and small cities.

Action programs will be focused on developing local leadership, citizen committees, and problem-solving and action methods that will help towns and small cities identify and deal with such problems as:

Health and sanitation facilities

Business decline

Air and water pollution control

Local government for shifting populations

Education, vocational training and recreation for youth

The economic and culturally disadvantaged segment of the population

Family adjustment and stability

Water supply and quality

Orderly land use

Adjustment of retirement, old age and reduced incomes.

Assistance from those listed above will be requested where appropriate in planning and at formal or informal educational sessions.

Assistance as needed will also be available through the Technical Action Panels already established to assist the Rural Area Development Program (R.A.D.) now operating at the State and county level. Rural Area Development is designed to help local groups, state agencies and private organizations develop all the resources of rural and urbanizing areas.

The Oregon State Rural Area Development Committee (R.A.D.) has voiced approval and support of this program proposal. This committee of private citizens has dedicated itself to a policy of promoting, inducing and stimulating the maximum development of natural, economic and human resources to the mutual benefit of the community, area, state, and nation. The committee's first objective,

"Encourages county or area committees to carefully and expertly analyze their present and future assets and liabilities. These committees then should be encouraged to take vigorous cooperative action to bring about needed results, fully utilizing the resources of our various institutions and agencies, both public and private—local, state, and federal. When and if it is recognized that solutions are beyond individual independent efforts it is our recommendation that assistance—technical, financial, or both be sought from appropriate agencies."

SUPPORTING DATA

A. Population to be served: The population to be served is urban and non-farm rural in nature. Census data for cities below 5,500 and for unincorporated urban-type communities and non-farm rural residences shows the following totals for the counties involved:

County:	Target population
Baker -----	15, 148
Malheur -----	24, 576
Umatilla -----	42, 917
Union -----	17, 404
Wallowa -----	6, 151
Total -----	33, 152

B. Personnel, facilities, equipment, materials, and financial resources:

One Extension Community Development agent will be hired to develop and carry out the proposed program in this area. This agent will be qualified by training and experience to carry out community development work.

Facilities, equipment and materials will be provided by Cooperative Extension Service through normal channels. The agent will be officed at Eastern Oregon College. Secretarial service will be provided.

The financial resources needed to pay salaries, equipment use, transportation, materials, and to supply supporting educational materials and professional assistance for fiscal year 1968 will be \$27,477 total.

C. Cooperating agencies will include State Technical Action Panel of the United States Department of Agriculture agencies: Farmers Home Administration, Soil Conservation Service, Forest Service, Agricultural Stabilization and Conservation Service, Statistical Research Service, Rural Electric Administration, and the Economic Research Service. Also included are the Rural Area Development Agency Group: State Department of Employment, Division of Planning and Development, State Department of Education, State Game Commission, State Department of Agriculture, State Department of Forestry, Oregon State Fish Commission, State Committee on Natural Resources, State Parks and Recreation Division of the Oregon Highway Department, and United States Department of Commerce, Economic Development Administration and Small Business Admin-

istration. Public citizen groups will include the State Rural Area Development Committee. Other organizations with interest include the League of Oregon Cities and the Association of Oregon Counties.

D. Time Schedule: The program in this area will start on July 1, 1967. It is the intent and the plan to continue the organization and leadership activities for a minimum of two years in each of the communities involved.

E. Plans for Evaluation: Long-range evaluation of this program will be based on the degree of accomplishment toward solving the problems identified and programmed by the citizen committees in participating communities.

Year-to-year evaluation must, however assess the degree to which the Community Development agent has carried out and completed the activities assigned. At the end of the first full fiscal year, the agent will submit a written report which will indicate, among other things:

The number of citizen committees established in towns and small cities in the area, including membership roles of these committees and frequency of meeting for each.

A list of training sessions held for committee members and other group representatives, with an agenda and attendance record as an exhibit for each session.

Number of small city and town self-surveys conducted, with a short report of the involvement of local people during each survey, and a summary of the analysis of findings as an exhibit for each survey.

Projections developed from economic and social studies of the larger geographic and political areas surrounding studied towns and communities: with a copy of the reported projections as an exhibit.

A summary of the planning and technical assistance provided by cooperating agencies, organization, and institutions: showing date of assistance, type of assistance rendered, persons providing assistance, and duration of their assistance effort.

Types of evaluation planned or carried on by local citizen groups or committees, with copies of any written evaluation as report exhibits.

As community or area committees become active, reports from the agent will indicate the degree to which committees are identifying and becoming active in relation to the problems listed in Section II of this proposal.

F. Relationship to other programs, particularly under federal and state legislation.

One of the factors of this proposal is to educate and motivate local leadership in the utilization of programs available to assist in community development. Public works planning programs under the Department of Housing and Urban Development, Loans and Grants to Rural Towns for Domestic Water System under Farmers Home Administration, Public Facility Loans under Housing and Urban Development, Public Works planning under the Economic Development Administration, Urban Development would be explained and assistance would be given in application for aid.

State programs in this field as administered by the State Division of Planning and Development and the planning program under the Bureau of Municipal Research would also become a part of this total effort.

In the field of social and recreational programs, opportunities exist in programs administered by the Office of Economic Opportunity and programs administered by the Department of Housing and Urban Development and the United States Department of Health, Education and Welfare. Opportunities exist for self help under the Rural Area Development program in developing Overall Economic Development Plans.

In total, it is the aim of this program to develop an awareness and willingness to accept or study programs offered in this area. The agent will be in an opportune position to develop the educational incentive and coordination needed to facilitate the inclusion of these small communities into ongoing programs and opportunities.

G. Relationships to existing university, college and/or community programs: Eastern Oregon College and Oregon State University are offering assistance, in addition to the Cooperative Extension Service, from the departments of Political Science, Sociology, Agricultural Economics, Economics and the Agricultural Experiment Stations.

From the University of Oregon the coordination and cooperation of the Bureau of Municipal Research will be available. Educational assistance has been pledged by the Division of Continuing Education. Competencies available from community colleges will also be utilized.

The Oregon State University Cooperative Extension Service has been active and is part of an effort to coordinate community development. Efforts in the past have been previously on the "macro" or county wide programs to develop economic and social gains. This proposal indicates the opportunity to involve small communities and concentrate on the "micro" portions of the overall community.

EVIDENCE OF THE COMMUNITY'S INVOLVEMENT IN AND COMMITMENT TO THE PROGRAM

This program is based on requests from leaders in towns and small cities for assistance from Oregon State University through the Cooperative Extension Service and other elements of the State System of Higher Education.

When community resource development programs are started in towns and small cities, representatives in the area will be involved to determine emphasis. This involvement will be at all stages from preliminary investigation of program potentials through execution and evaluation of the programs adopted. Active resident participation is essential to the success of the community resource developments programs.

This program has been evaluated by a local committee representing towns and small cities in the area. This committee has pledged its support for and commitment to the program.

As reported elsewhere in this proposal, the program was reviewed in detail with the State Rural Area Development Committee. Members of this committee are all private citizens. Several of them are leaders in towns and small cities from all parts of the state. The committee members officially endorsed the program and committed themselves to support it in their respective areas.

Action programs will be focused on developing local leadership, citizens committees, and problem solving and action methods that will help towns and small cities identify and deal with community problems. Other citizens committees will be established with the concurrence and support of local government officials.

Committee members and other group representatives will participate in training programs to better equip themselves to perform community leadership roles and responsibilities in local government.

PARTICIPATING COLLEGE OR UNIVERSITY—OREGON STATE UNIVERSITY AND EASTERN OREGON COLLEGE

A. Faculty members:

1. The Cooperative Extension Service—has a local office in each county with full-time staff in agriculture, home economics, and 4-H Club work who are members of the faculty at OSU. Among its staff of specialists at the State level are the following, whose competencies are particularly pertinent to this program proposal:

Theodore Sidor, Resource Development Specialist, with experience in county land use planning and zoning;

Roberta Frasier, Family Life Specialist, a nationally recognized authority in the field of human relations and parent education;

Marion D. Thomas, Extension Economist (Public Affairs); experienced in public affairs education and in economic forecasting;

Leon Garoian, Marketing Management Specialist, nationally recognized for educational accomplishment in the training of managers and directors of agricultural marketing firms.

2. Department of Social Science:

a. *Courses relative to the proposal:*

O. S. U.

Anth 215	Anthropology
Soc 204, 5, 6	General Sociology
Soc 411	Juvenile Delinquency (g)
Soc 412	Criminology and Penology (g)
Soc 421	Social Change (g)
Soc 434	Social Stratification (g)
Soc 437	Sociology of Race Relations (g)
Soc 456	Industrial Sociology (g)
Soc 468	Sociology of Urban Life (g)
Soc 469	Sociology of Rural Life (g)
Soc 474	Social Psychology (g)
Soc 475	Community Organization (g)

E. O. C.

Soc 204, 5, 6	General Sociology
Soc 334	Social Psychology
Soc 338	Marriage and the family
Soc 416, 17	Criminology and Delinquency
Soc 437	Sociology of Race Relations
Pol Sci 201, 2, 3	American Government
Pol Sci 280, 1, 2	Comparative Government

B. Staff with training in community organization or experience with action programs:

O. S. U.

Tilman M. Cantrell
Charles W. Cormack
John G. Curry
William A. Foster, Jr.
Thomas C. Hogg

William C. Jenne
Vernon D. Malan
Hans H. Plambeck
Ray A. Tennyson

E. O. C.

Joseph H. Gaiser
John W. Jamburh

Lloyd R. O'Connor

C. Sociologist named for advisory committee:

O. S. U.

William A. Foster, Jr.

E. O. C.

Joseph H. Gaiser

3. Department of Agricultural Economics O. S. U.

a. *Relevant Courses Offered in the Department:*

O.S.U.

AEc 418	Federal Programs and the Farmer
AEc 461	Land and Water Economics
AEc 411	Agricultural Policy
AEc 523	Analysis of Agricultural Policies

E. O. C. Department of Economics

EC 319	Public Finance
EC 325	Labor Economics
EC 334	Government Control of Private Business

b. *Faculty—O. S. U.*

Dr. G. E. Blanch
Dr. Russell Youmans
Dr. Curtis Mumford
Dr. G. E. Korzan
Dr. Herbert Stoeven
Dr. E. N. Castle

Faculty—E. O. C.

Ralph Harold Todd

c. *Person named for service on advisory committee:*

Dr. Russell Youmans, Assistant Professor, Agricultural Economics—Research Experience: Conducted research on resource (labor) productivity in an underdeveloped area (Brazil). Leadership was given to graduate students conducting research on a range of agricultural and social problems, i.e., food consumption relationships in urban areas, identifying marketing channels and institutions, estimating the technical potential for increasing farm production, etc., in Brazil. Current research: Estimation of irrigation water needs for Oregon for the coming years (this includes projecting the economic base in Oregon), assisting the Economic Work Group of the Columbia-North Pacific Study in their analysis of the economic base in the Pacific Northwest.

d. *Data on problems in small communities:*

1. The Department has just completed a comprehensive study on the economic development of the Willamette Valley.

2. A detailed analysis of trade patterns has been completed on the Lebanon business community in the Willamette Valley.

3. An in-depth analysis of the economic interrelationships existing in a small community is nearing completion. This is a pioneering study in terms of developing methodology for the analysis of the economic problems of small communities.

4. Department of Political Science

a. *Courses relative to the proposal:*

O. S. U.

PS 203	American Government
PS 324,5,6	American Political Process
PS 411,12,13	Public Administration
PS 423	Municipal Government
PS 313	State Government and Politics

E. O. C.

PS 203	American Government
PS 381,2,3	Comparative Government

b. *Faculty with pertinent training and experience:*

O. S. U.

Prof. Russell W. Maddox, Jr.
 Prof. Robert F. Fuquay
 Assoc. Prof. W. A. McClenaghan

E. O. C.

William D. Spear

c. *Person named for service on advisory committee:*

O.S.U.

Prof. Russell W. Maddox, Jr.

E.O.C.

Prof. William D. Spear

5. Agricultural Experiment Station.

This unit is a pertinent resource because of its research interest in the fields of sociology and economic development. Staff members previously mentioned in the Agricultural Economics Department are also members of the Experiment Station staff. Cooperation from the Experiment Station will be particularly helpful both in establishing base data and in project evaluation.

6. Other units of the State System of Higher Education some of whose staff will be involved at various stages of the program include :

The Bureau of Municipal Research, University of Oregon

The Division of Continuing Education

The Bureau of Business Research, University of Oregon

7. Other colleges and community colleges in the demonstration areas will be involved in such ways as local needs and available resources are identified and catalogued.

B. *Description of Services and Involvement :*

1. The Cooperative Extension Service will handle administration of the program. This will require 10% of the time of one Assistant Director, The Resource Development Specialist and of each of two State Agents who serve as District Supervisors. Its county staff members will take part in the program in the following ways :

2. Identification of community leaders and establishment of contact with them.

a. Providing data concerning trends and probable developments in the agricultural and forestry phases of the local economy as may be pertinent in community self-appraisal and planning.

b. Providing project materials and training leaders for study groups in such fields as family life, child development, family financial management and taxation education.

c. Assistance in the organization of groups for special purposes, such as water control districts, sewerage districts, diking districts, marketing cooperatives, etc.

3. The Departments of Sociology and Anthropology of Eastern Oregon College and Oregon State University will have staff members on the project advisory committee. Department staff members will be available for consultation by the project personnel as may be required and will be available for consultation with community leaders in special cases. Similar participation has been assured from the Departments of Agricultural Economics and Political Science.

4. The Bureau of Municipal Research will have representatives on the project advisory committee and its staff will be drawn upon for consultation. Arrangements will be made with the Bureau for preparation of special publications that may be needed for assistance in the training of community leaders.

5. The Division of Continuing Education will be represented on the project advisory committee and also will be involved in arranging training courses for community leaders.

6. Where feasibility studies of proposed enterprises are necessary, appropriate departments of Eastern Oregon College and the Agricultural Experiment Station will be involved together with the Bureau of Municipal Research and the specialists of the Cooperative Extension Service. The Division of Planning and Development in the State Department of Commerce also will be enlisted in such undertakings where practical.

C. Institutional support will be provided from unencumbered funds available to the Cooperative Extension Service in fiscal year 1966-67 in the amount to match the requested federal support from Title I funds.

1. At Eastern Oregon College Lloyd O'Connor, Associate Professor of Education; Director of Academic Research and Director of Information will be assigned approximately 10% of his time to coordinate activities between the Extension Community Development Agent and Eastern Oregon College.

FUNDS FOR GRADUATE FELLOWSHIPS UNDER TITLE IV OF NDEA

Senator HILL. I have received a letter from Senator Jack Miller, of Iowa, with which he has enclosed a letter sent to him by Dr. Howard R. Bowen, president of the University of Iowa, urging the restoration of funds for graduate fellowships under title IV of the National Defense Education Act.

(The material referred to follows:)

U.S. SENATE,
COMMITTEE ON AGRICULTURE AND FORESTRY,
June 29, 1967.

Hon. LISTER HILL,
Senate Appropriations Committee,
1235 N.S.O.B., Washington, D.C.

DEAR SENATOR: It has come to my attention that the House Appropriations Committee cut the Administration's budget request for Title IV of the National Defense Education Act. The request was \$96,600,000 and the House reduced it by \$10 million. While this is not a sizable reduction in relation to the total amount requested, it would reduce the number of new fellowship recipients from 6,000 (the number of new recipients during each of fiscal years 1966 and 1967) to 3,400. The Administration request would hold the number of new recipients fairly near the 1966 and 1967 totals.

The importance of maintaining the opportunities for new recipients is self-evident, and I only wish it were possible to expand the total, because the training of competent educators is very high on the priority list.

A copy of a letter which I received recently from the President of the University of Iowa is enclosed. It graphically illustrates the continuing need for *new* fellowships.

I am hopeful your subcommittee will see fit to provide for the full budget request.

Sincerely yours,

JACK MILLER.

THE UNIVERSITY OF IOWA,
Iowa City, Iowa, June 2, 1967.

HON. JACK R. MILLER,
Senate Office Building, Washington, D.C.

DEAR JACK: It is with grave concern that the University of Iowa learns that the House Committee on Appropriations has cut 10 million dollars from the funds provided for fellowships under Title IV of the National Defense Education Act. I think you should know how important these fellowships are to your University.

When the fellowship program was broadened for 1965-66, 40 of our University departments offering the Ph. D. degree demonstrated urgent need for 150 fellowships. The University of Iowa received 85 fellowships for 30 departments. Last year 36 departments showed need for 119 *new* fellowships in addition to the 85 awards from the previous year. The University was awarded 70 fellowships for 33 departments. Again this spring applications were forwarded to Washington with the appeal from 39 departments for 134 fellowships *in addition to those awarded for 1967-68*. Our needs already far exceed the available awards.

Translated into dollars these awards will mean the following for the 1967-68 academic year at the University of Iowa:

	Fellowships	Stipend	Allowances for cost of education
1st year	70	\$140,000	\$175,000
2d year	85	187,000	212,500
3d year	19	45,600	47,500
Total		372,600	435,000

During this year the cost of education allowance will be used in the following ways by the University:

Supply allowance to departments	\$ 87,000
Tuition (estimate)	121,000
Money to strengthen and improve graduate programs (additional faculty appointments, specialized equipment and materials needed in research and creative work, publication support, etc.)	226,200

This past year the money available for graduate programs enabled the University to purchase a Fine Press to enhance the programs in the creative arts, to purchase research equipment, to provide additional stipends for research assistantships, and to bring nationally and internationally prominent scholars to the campus to provide stimulating ideas for our graduate programs. This money has had a multiplier effect far beyond the actual dollar award.

It is noted that some Congressmen are advocating more extensive loan programs at the expense of the fellowship programs. The State Board of Regents on May 12, 1967 issued a statement on the Role of Student Fees in the Finance of Higher Education. Their comments on loans are particularly pertinent:

"While a student loan system with liberal loans, long repayment periods, and low interest is surely an important part of any system for the finance of students, it is not socially desirable to load too much of the cost on students by means of loans—certainly not to substitute student loans for tax support of higher education. The students who need loans are those from families of modest income. It is neither equitable nor socially desirable to expect this group of young people to start out life with substantial indebtedness. The problem is compounded when two young people with indebtedness marry. The loan system

is especially undesirable for women who are reluctant to go into debt knowing that the indebtedness may be a burden to a future husband.

"The effort to shift costs from taxpayers to student borrowers is in reality only a shift from one kind of taxation to another. The new taxation in the form of repayment of loans places a special burden on those who have come from low-income backgrounds and need special help in starting out on their careers rather than the handicap of debt repayment.

"Indebtedness at the end of a college career has the affect of undesirably restricting educational and vocational choices. A student with several thousand dollars of indebtedness tends to avoid low-paying vocations like teaching or the ministry, and he is often not in a position to enter the Peace Corps or the Job Corps or advanced study. To keep open the freedoms of occupational choice which is part of the American heritage, it would be best to use student loans with moderation and prudence."

I respectfully urge you to exert your influence to not only maintain the amount of money for the NDEA Title IV program, but to increase support for this program for 1968-69. This program has attracted high quality students to pursue doctoral degrees which will enable them to serve the needs of higher education in this Nation.

Yours sincerely,

HOWARD R. BOWEN.

FUNDS FOR NATIONAL DEFENSE STUDENT LOAN PROGRAM

Senator HILL. I have received a letter from Senator John Sherman Cooper, of Kentucky, with which he has included a telegram sent to him by Mr. James Boswell, the President of Cumberland College, Williamsburg, Ky., urging funds for national defense student loans equal to the fiscal year 1967 level.

(The material referred to follows:)

UNITED STATES SENATE,
COMMITTEE ON PUBLIC WORKS.
June 21, 1967.

HON. LISTER C. HILL,
Chairman, Subcommittee on HEW,
Committee on Appropriations,
United States Senate,
Washington, D.C.

DEAR MR. CHAIRMAN: I enclose a wire I have received from Mr. James M. Boswell, the President of Cumberland College in Williamsburg, Kentucky, concerning appropriations for fiscal 1968 for the National Defense Student Loan Program.

I would appreciate very much your including this wire as part of the hearing record.

With kind regards, I am,

Sincerely yours,

JOHN SHERMAN COOPER.

[Telegram]

WILLIAMSBURG, KY., June 21, 1967.

Senator JOHN SHERMAN COOPER,
Senate Office Building,
Washington, D.C.:

Please use your influence to get an amount appropriated for the National Defense Student Loan program sufficient to meet. Last year many deprived students from our Appalachian section were unable to attend college because of limited appropriation. The Government can put money in no better place than in the national defense student loan program.

J. M. BOSWELL,
President, Cumberland College.

FUNDS FOR GRADUATE FELLOWSHIP PROGRAM

Senator HILL. I have a letter from Senator Anderson, of New Mexico, enclosing a copy of a letter to him from Mrs. Maryellen Triviz regarding the cut voted by the House in funds for the graduate fellowship program.

(The material referred to follows:)

U.S. SENATE,
COMMITTEE ON AERONAUTICAL AND SPACE SCIENCES,
June 5, 1967.

Hon. LISTER HILL,
Chairman, Subcommittee on Appropriations for Labor and Health, Education, and Welfare, U.S. Senate.

DEAR MR. CHAIRMAN: I have just received a letter from Mrs. Maryellen Triviz who is administrative assistant to Dr. Merrell E. Thompson, Dean of the Graduate School at New Mexico State University. Mrs. Triviz' husband was employed in my office while studying for his law degree and now is a district judge in Las Cruces. Judge and Mrs. Triviz have always strongly supported New Mexico State University and, of course, I am personally interested in the work that the University is doing. For that reason I am sending you a copy of Mrs. Triviz' letter of May 29 commenting on the need for funds under Title IV of the National Defense Graduate Fellowship Program.

When you have hearings on the education appropriation, I hope you will take this letter into consideration and do what you can to be of assistance.

Sincerely yours,

CLINTON P. ANDERSON.

NEW MEXICO STATE UNIVERSITY,
Las Cruces, N. Mex., May 29, 1967.

Hon. CLINTON P. ANDERSON,
U.S. Senate,
Washington, D.C.

DEAR SENATOR: As Eloise might have told you, I am currently working as an administrative assistant to Dr. Merrell E. Thompson, Dean of the Graduate School at New Mexico State University. The academic circles are certainly different than the legal circles to which I have been accustomed for years, but already I have become vitally interested and concerned with the affairs of the University, and particularly the Graduate School.

We were quite distressed to find that the House Committee on Appropriations has cut \$10 million from the funds provided for fellowships under Title IV of the NDEA (National Defense Graduate Fellowship Program) administered by the Department of Health, Education, and Welfare. Last year we were awarded by NDEA a three-year grant supporting ten graduate students and this year we received another similar grant for ten graduate students.

Since the National Aeronautics and Space Administration, as well as the National Science Foundation, has drastically reduced the number of graduate students they will support at our University, if the fellowships under NDEA are reduced next year from 6000 to approximately 3450 for the entire United States (as would have to be done under the cut of the House of Representatives) it would have disastrous effects on New Mexico State.

In the last two months I have been working with our fellowship committee on selection of applicants for NDEA, NASA and NSF fellowships. By having such fellowships available, we are able to attract students from all parts of the United States—from such schools as State University of New York, Columbia, William Penn, Drexel, Brigham Young, Georgia—who have 4.0 grade point averages and exceptionally high Graduate Record Examination scores. This not only has an effect of increasing enrollment, but more important builds up the caliber of our school, which is the prime objective of our Dean of the Graduate School.

Anything you or your staff could do in contacting the members of the Senate Subcommittee on Appropriations for Labor, Health, Education, and Welfare, which will begin public hearings soon after June 1st, to encourage them to restore the \$10 million will certainly be appreciated by all of us here.

With warmest personal regards,

Sincerely,

MARYELLEN TRIVIZ.

FUNDS FOR TITLE III, NATIONAL DEFENSE EDUCATION ACT

Senator HILL. I have a letter from Senator Mondale, of Minnesota, urging the allowance by the committee of a more adequate allowance for the acquisition of equipment and minor remodeling until title III of the National Defense Education Act, as amended.

(The letter follows:)

U.S. SENATE,
COMMITTEE ON AERONAUTICAL AND SPACE SCIENCES,
April 21, 1967.

HON. LISTER HILL,
Chairman, Appropriations Subcommittee on Departments of Labor, Health, Education, and Welfare and Related Agencies, U.S. Senate, Washington, D.C.

DEAR LISTER: I have read with great interest the recent testimony of Senator Wayne Morse supporting restoration of the full appropriation of acquisition funds under Title III of the National Defense Education Act.

I believe that Senator Morse has put the case very succinctly and persuasively. My own experience in the state of Minnesota has brought me to exactly the same conclusion. It is absolutely vital for the Congress to support appropriations for Title III at the full level, in spite of the budget recommendations.

I hope that this letter will adequately communicate to you my strong feelings that Title III of NDEA must be adequately supported. If there is any way in which I can be of further assistance, I hope you will call on me.

With warmest regards.

Sincerely,

WALTER F. MONDALE.

FUNDS FOR ADULT BASIC EDUCATION

Senator HILL. Senator Mark Hatfield, of Oregon, has asked me to include a letter which he received from Mr. George D. Porter, supervisor of adult education, public schools of Salem, Oreg., urging funds for adult basic education in the amount of the full authorization.

(The material referred to follows:)

SALEM PUBLIC SCHOOLS,
ADULT EDUCATION DEPARTMENT,
Salem, Oreg., June 5, 1967.

HON. MARK O. HATFIELD,
*Senate Office Building,
Washington, D.C.*

DEAR SENATOR HATFIELD: I was appalled when I received information that the House of Representatives on May 26th passed House Resolution 10196 covering the 1968 appropriations for education programs. Within this House Resolution was \$40.25 million for Adult Education for the fiscal year beginning July 1, 1967. This is an amount which is \$4 million less than contained in the President's Budget, and almost \$20 million less than the fiscal year 1968 authorization of \$60 million.

We here in Salem had been hoping there would still be a supplementary appropriation for the fiscal year 1967 for Adult Basic Education in the amount of \$10 million as a means of helping to continue programs already started in Adult Basic Education, and also to overcome deficits in these Adult Basic Education Programs which have accrued in some schools. But now to learn that there is going to be just a little over \$40 million for Adult Basic Education for state plans and programs for the fiscal year 1968, which will net out just over \$32 million to be used in an attempt to reduce illiteracy in the United States, it is sad commentary on the action of the Congress.

It was my hope that during the fiscal year 1968 I would see money made available for Adult Basic Education for all grades less than college level, as this is a crying need in our country. I should like to direct your attention to a map printed by the U.S. Printing Office which breaks the United States down into counties, and then colors in purple those counties in the United States with 55%

or more of their adults with a high school diploma. It is a sad and dreary picture, and I would urge you to look at one of these maps. Three counties in the state of Oregon qualify for the purple color.

As I see school budgets going down to defeat throughout our state, I can't help but think that one of the basic problems is that people with inadequate educations cannot get too concerned about providing adequate education for the children for the state of Oregon. They are looking at the short range dollar sign, instead of the long range dollar sign.

I urge you, Senator Hatfield, to get behind appropriations for Adult Basic Education for the fiscal year 1968. We need an appropriation of \$60 million as authorized. This is the minimum amount to do the job in Adult Basic Education. If you cannot see your way clear to support the \$60 million, certainly I would urge you to support the \$44.2 million sought in the President's Budget.

Thank you very much for your time.

Sincerely yours,

GEORGE D. PORTER,
Supervisor of Adult Education.

FUNDS FOR TITLE III OF THE NATIONAL DEFENSE EDUCATION ACT

Senator HILL. I have a letter from Senator Allen J. Ellender, of Louisiana, with which he has enclosed a letter to him from Mr. Andrew H. Gasperez, State supervisor, Industrial Arts Education, Louisiana State Department of Education, urging full funding for the acquisition of equipment and minor remodeling as authorized under title III of the act.

(The material referred to follows:)

U.S. SENATE,
COMMITTEE ON AGRICULTURE AND FORESTRY,
May 5, 1967.

HON. LISTER HILL,
Chairman, Subcommittee on Departments of Labor and Health, Education, and Welfare, Committee on Appropriations, U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: Enclosed is copy of letter of April 24 from Mr. Andrew H. Gasperez, State Supervisor, Industrial Arts Education, Louisiana State Department of Education, Baton Rouge, Louisiana.

Mr. Gasperez makes an appeal for funds for the National Defense Education Act, Title III (a) and (b), setting forth three recommendations in this connection. I will appreciate your Committee's consideration of his request and your making his letter a part of the record of the hearings.

Thanking you for this courtesy and, with kindest personal regards, I am,

Sincerely yours,

ALLEN J. ELLENDER.

STATE OF LOUISIANA, DEPARTMENT OF EDUCATION,
Baton Rouge, April 24, 1967.

HON. ALLEN J. ELLENDER,
U.S. Senate,
Senate Office Building, Washington, D.C.

DEAR SENATOR: The National Defense Education Act, Title III (a) and (b), has touched upon the lives of most elementary and secondary students in the schools of our nation by significantly improving their instructional programs.

(1) The proposed cut in NDEA Title III appropriations, far below the authorization of Congress and the current year's appropriation,—(2) the proposed transfer of funds for program supervision under NDEA Title III to the Elementary and Secondary Education Act Title V,—and (3) the reduction in NDEA administrative funds will greatly harm this highly successful program.

Your support is asked to bring about:

(1) The full appropriation of \$110,000,000 for NDEA Title III (a) and \$10,000,000 for NDEA administration and program supervision for fiscal year 1968 as authorized by Congress.

(2) The retention of funds for specialized program consultant service under NDEA Title III (b) as well as the retention of present procedures for administering NDEA funds at the State level.

(3) The extension of NDEA Title III (a) and (b) for five years with an increase in appropriation to \$175,000,000 for NDEA Title III (a) and an increase in appropriation to \$15,000,000 for NDEA Title III (b) for each year beginning in fiscal year 1969.

Sincerely,

ANDREW H. GASPERECZ,
State Supervisor, Industrial Arts Education.

FUNDS FOR ACQUISITION OF EQUIPMENT AND MINOR REMODELING OF
SCHOOLS

Senator HILL. I have a letter from Senator John Sherman Cooper, of Kentucky, with which he has enclosed a letter to him from Mr. Harry M. Sparks, superintendent of public instruction for the State of Kentucky, urging adequate funding for acquisition of equipment and minor remodeling under title III of the National Defense Education Act of 1958.

(The material referred to follows:)

U.S. SENATE,
COMMITTEE ON PUBLIC WORKS,
May 31, 1967.

HON. LISTER HILL,
Chairman, Subcommittee on Labor-HEW, Committee on Appropriations, U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: I enclose a copy of a letter I have received from the Kentucky Superintendent of Public Instruction about the budget request for Title III of the NDEA.

I would appreciate your including it as part of the hearing record.

With kind regards, I am,

Sincerely yours,

JOHN SHERMAN COOPER.

COMMONWEALTH OF KENTUCKY,
DEPARTMENT OF EDUCATION,
Frankfort, Ky., May 22, 1967.

HON. JOHN SHERMAN COOPER,
*U.S. Senate,
Washington, D.C.*

DEAR SENATOR COOPER: The Department of Education desires to call your attention to the enclosed material from the U.S. Office of Education entitled "A Study of the NDEA Title III Program in Twelve Selected States". We feel that this is a most worthwhile piece of information relative to the Title III program.

I would like to emphasize two of the more pertinent conclusions which have been brought forth by this study which relate directly to Kentucky's situation. These include:

1. The school districts of low levels of economic ability make more frequent use of the NDEA, Title III programs.

2. The NDEA, Title III funds provide relatively greater financial support to school districts of low level economic ability than do those with high level economic ability.

I would like to point out the importance of the NDEA, Title III programs in the Commonwealth of Kentucky. This program has assisted our school districts to achieve a better materials balance during the past decade than would have been possible without such support. It is hoped that no serious budgetary cut in this program will come about during this session of the Congress.

Your support in this regard will be deeply appreciated by the school profession throughout the Commonwealth.

Respectfully yours,

HARRY M. SPARKS,
Superintendent of Public Instruction.

COMMUNITY SERVICE AND CONTINUING EDUCATION PROGRAM

Senator HILL. I have a letter from Senator Wayne Morse, of Oregon, with which he enclosed copy of a letter to him from Dr. Ben Lawrence, executive director of Educational Coordinating Council, Salem, Oreg., urging the allowance of at least the full budget estimate for the program.

(The material referred to follows:)

U.S. SENATE,
COMMITTEE ON LABOR AND PUBLIC WELFARE,
Washington, D.C., June 8, 1967.

HON. LISTER HILL,
Chairman, Subcommittee on the Departments of Labor, and Health, Education, and Welfare, and Related Agencies, Committee on Appropriations, U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: I am bringing to your attention the attached copy of a letter from Dr. Ben Lawrence under date of May 30, 1967, together with the attached breakdown of funded and unfunded projects in the State of Oregon under the authorities of Title I of the Higher Education Act.

It is my hope that you and your colleagues on the subcommittee in your review of the budget estimates for this worthy program will find the data helpful in substantiating the need for financing of this program in its full authorization, and certainly at not less than the budget recommendations.

In my judgment, Dr. Lawrence has presented very strong testimony in support of expanded financing of the Title I program.

With kindest regards,

Sincerely,

WAYNE MORSE,
Chairman, Education Subcommittee.

U.S. SENATE,
COMMITTEE ON LABOR AND PUBLIC WELFARE,
June 8, 1967.

DR. BEN LAWRENCE,
Executive Director, Educational Coordinating Council, Salem, Oreg.

DEAR DR. LAWRENCE: I very much appreciated your thoughtfulness in supplying me as an attachment to your letter of May 30, 1967 with the most helpful breakdown of Title I Higher Education Act projects in the State of Oregon. This can be most helpful to me in my further representations to the Senate Appropriations Committee on this program.

I am enclosing for your information a copy of my earlier statement on educational funding which I hope you will find of use.

With kindest regards,

Sincerely,

WAYNE MORSE.

STATE OF OREGON,
EDUCATIONAL COORDINATING COUNCIL,
Salem, Oreg., May 30, 1967.

HON. WAYNE MORSE,
*U.S. Senator,
Old Senate Office Building, Washington, D.C.
(Attention Mr. Charlie Lee).*

DEAR SENATOR MORSE: With reference to your inquiry concerning funded and non-funded projects under Title I of the Higher Education Act of 1965, you will find attached a brief summary of all such applications in Oregon for fiscal year 1967.

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In summary:

I. Number of programs funded-----	5
A. Federal funds required-----	\$133,438.00
B. State funds -----	\$72,880.00
C. Total -----	\$206,318.00
D. Number of participating institutions-----	8
II. Number of qualified proposals submitted but not funded--	18
A. Federal funds that would have been required-----	\$436,383.14
B. State funds -----	\$167,779.14
C. Total funds -----	\$604,162.28
D. Number of participating institutions-----	14

III. In order to conduct a maximum level meaningful Title I program for fiscal year 1968, assuming a 75 percent federal and 25 percent state funding ratio, Oregon would require approximately \$1,000,000 federal funding. We feel our proposals for 1968 under our proposed new state plan will be much more meaningful and effective. We expect our state plan to identify an increasing array of community problems that can be ameliorated by this program.

Very truly yours,

BEN LAWRENCE,
Executive Director.

FISCAL YEAR 1967 PROJECTS—FUNDED

Title: Center of Leisure-Time Study and Community Service

Purpose: To bring together the available resources of staff and qualified students in the Department of Recreation and Park Management with those communities and agencies seeking assistance in the area of leisure-time services.

University(ies): University of Oregon

Total Federal Funds: \$12,176.00 (65%)

Total Local Funds: \$6,520,000 (35%)

Total Funds: \$18,696.00

Title: Urban Studies Center

Purpose (Problem): Inadequate communication, especially between the colleges of the metropolitan area and all levels and types of community organizations, activities and needs.

University(ies): Lewis and Clark, Marylhurst, Reed, and the University of Portland.

Total Federal Funds: \$51,615.00

Total Local Funds: \$42,688.00

Total Funds: \$94,303.00

Title: Community Development in Towns and Small Cities

Purpose (Problem): Organization and leadership

University(ies): Oregon State University; University of Oregon

Total Federal Funds: \$35,500.00

Total Local Funds: \$11,849.00

Total Funds: \$47,349.00

Title: Demonstration program for the Development of a Police-Community Relations Program.

Purpose (Problem): Need to develop closer cooperation between police agencies and citizens in law enforcement.

University(ies): University of Oregon and Portland State College

Total Federal Funds: \$13,870.00

Total Local Funds: \$4,623.00

Total Funds: \$18,493.00

Title: Community Development in Towns and Small Cities in Northeast Oregon

Purpose (Problem): Organization and leadership

University(ies) : Oregon State University and Eastern Oregon College
 Total Federal Funds : \$20,277.00
 Total Local Funds : \$7,200.00
 Total Funds : \$27,477.00

FISCAL YEAR 1967 PROJECTS—NONFUNDED

Title : Family Human Relations Training for Community Professionals.
 Problem : Continuing education needs of community agency professionals who need the skills to give families more comprehensive and effective help.
 University(s) : University of Portland
 Total Federal Funds : \$25,070.00
 Total Local Funds : \$6,567.00
 Total Funds : \$31,637.00

Title : University of Portland Assistance to North-CAP
 Problem : The need in North Portland for a high quality and effective citizens' community action program to unite the area and to meet impending changes.
 University(s) : University of Portland
 Total Federal Funds : \$31,198.00
 Total Local Funds : \$5,600.00
 Total Funds : \$36,798.00

Title : Study of the City of Cottage Grove
 Problem : Concern for deteriorating environment
 University(s) : University of Oregon
 Total Federal Funds : \$27,805.00
 Total Local Funds : \$9,331.00
 Total Funds : \$37,136.00

Title : Oregon Touring Company
 Problem : Lack of live theatre as an element in the cultural life of the non-metropolitan areas.
 University(s) : University of Oregon
 Total Federal Funds : \$44,195.00
 Total Local Funds : \$15,115.00
 Total Funds : \$59,310.00

Title : Field Placement Program
 Problem : The effective and adequate recruitment of personnel to career commitments in the community service occupations.
 University(s) : University of Oregon
 Total Federal Funds : \$24,000.00
 Total Local Funds : \$10,653.00
 Total Funds : \$34,653.00

Title : Demonstration Program in Development of Techniques and Materials for Advanced Training of City and County Planning Commission Members.
 Problem : Need to develop greater understanding by public officials, particularly citizen members of planning commissions, of methods of approaching and analyzing recurring problems and issues commonly confronting local planning commissions in Oregon.
 University(s) : State System of Higher Education, Division of Continuing Education; University of Oregon (including Bureau of Municipal Research and Service, Urban Planning Department, and Audio-Visual Department); and Oregon State University (Cooperative Extension Service).
 Total Federal Funds : \$7,830.00
 Total Local Funds : \$2,610.00
 Total Funds : \$10,440.00

Title : Continuing Education in Environmental Design for Practicing Professionals
 Problem : Educational Needs of Practicing Professionals in Environmental Design.
 University(s) : University of Oregon
 Total Federal Funds : \$11,400.00
 Total Local Funds : \$3,800.00
 Total Funds : \$15,200.00

Title: Community Environment Study

Problem: Limited Citizen concern for the quality of the visual environment of their community.

University(s) : University of Oregon

Total Federal Funds: \$14,893.00

Total Local Funds: \$5,216.00

Total Funds: \$20,109.00

Title: A Proposal for Teacher Aide Training Program

Problem: The need and value of teacher aides in our schools has been established but no training program has been made available to insure their continued growth development and acceptance.

University(s) : Treasure Valley Community College

Total Federal Funds: \$18,750.00

Total Local Funds: \$6,250.00

Total Funds: \$25,000.00

Title: Special Orientation Program for Planners

Problem: Planners have inadequate information to enable them to effectively utilize the resources of the faculties in the sciences and social sciences.

University(s) : Portland State College

Total Federal Funds: \$4,649.00

Total Local Funds: \$2,880.00

Total Funds: \$7,529.00

Title: Demonstration Program for Day Care in the Portland Area

Problem: The development of adequate day care facilities for children.

University(s) : Portland Community College

Total Federal Funds: \$45,710.00

Total Local Funds: \$18,886.00

Total Funds: \$64,596.00

Title: Application of Soil Survey to Land Use Planning

Problem: Land use planning and regulation

University(s) : Oregon State University, Cooperative Extension Service and Agricultural Experiment Station

Total Federal Funds: \$29,749.00

Total Local Funds: \$10,092.00

Total Funds: \$39,841.00

Title: Youth Leadership Assistance: A seminar in Youth Leadership concepts for citizens professional and non-professional involved in various kinds of youth activities

Problem: A large number of adolescents in East Multnomah and Clackamas Counties share a serious difficulty with their national counterparts in assimilating the mores, patterns and activities of our modern society, and making the transfer to adulthood.

University(s) : Division of Continuing Education

Total Federal Funds: \$1,104.14

Total Local Funds: \$1,104.14

Total Funds: \$2,208.28

Title: The Pacific Northwest Megalopolis

Problem: There is ample evidence that professional staff employees in community agencies—both public and private—do not have adequate and accurate information to describe and deal with the developing megalopolis in the Northwest.

University(s) : Lewis and Clark College

Total Federal Funds: \$6,000.00

Total Local Funds: \$1,500.00

Total Funds: \$7,500.00

Title: Community Action Coordinating Council

Problem: To consider formation of a Statewide Council to Coordinate Community Action Proposals and Projects

University(s) : Institution of the State System of Higher Education, State of Oregon, and the Division of Continuing Education

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Total Federal Funds: \$4,000.00

Total Local Funds: \$200.00

Total Funds: \$4,200.00

Title: Physical Education Program for Disadvantaged Children

Problem: The public schools give very little in gymnastics, and no program in weight training or outdoor recreation.

University(s): Blue Mountain Community College

Total Federal Funds: \$29,961.00

Total Local Funds: \$5,964.00

Total Funds: \$35,925.00

Title: Community Field Service Project

Problem: To involve the academic program of selected college students with the ongoing life of the community in order to: (1) provide needed assistance to the community from capable students; (2) help organizations to alleviate community problems by (a) temporary relief for personnel and financial needs; (b) developing potential professional workers; (c) assisting students in relating and integrating their academic programs to basic community needs and service; and (d) encouraging students toward career choice in the field of community services.

University(s): Lewis and Clark College

Total Federal Funds: \$18,924.00

Total Local Funds: \$22,498.00

Total Funds: \$41,422.00

Title: Southern Oregon Alliance for Innovative Communities

Problem. The needs of Southern Oregon are many and diverse. University Extension and the Cooperative Extension Service have, in past years, attempted to cope with multitudes of situations but have been quite limited in human and financial resources. Meeting the situations and seeking solutions which will benefit the region and the communities involved requires the cooperative efforts of these two organizations in addition to the regional colleges, community colleges, Intermediate Education Districts, local school districts, county governmental agencies, state agencies, and community civic organization and groups. By application of these experienced agencies in an organized effort, the region and the community involved will be better able to achieve necessary solutions to pressing problems.

University(s): Oregon State University; Oregon Technical Institute; Southern Oregon College; Southwestern Oregon Community College; Umpqua Community College

Total Federal Funds: \$91,145.00

Total Local Funds: \$39,513.00

Total Funds: \$130,658.00

GRADUATE FELLOWSHIPS UNDER TITLE IV OF NDEA

Senator HILL. I have a letter from Senator Joseph Tydings, of Maryland, enclosing a copy of a telegram from Dr. Milton S. Eisenhower, president of Johns Hopkins University, urging restoration of funds for graduate fellowships under title IV of the National Defense Education Act of 1958.

(The material referred to follows:)

U.S. SENATE,
COMMITTEE ON THE JUDICIARY,
June 12, 1967.

Hon. LISTER HILL,

Chairman, Subcommittee on Departments of Labor and Health, Education, and Welfare and Related Agencies, Senate Appropriations Committee, U.S. Senate, Washington, D.C.

DEAR LISTER: A number of the leading educators in the state of Maryland have contacted me regarding their grave concern at the action of the House Appropriations Committee in reducing the numbers of Title IV Graduate Fellowships available under the National Defense Education Act. In view of the serious short-

age of qualified teachers in higher education in this country, I hope you will act to restore these funds.

A telegram which I have received from Dr. Milton S. Eisenhower, President of Johns Hopkins University, eloquently attests to the need for restoration of funds for these fellowships, and I am enclosing a copy of that telegram for your information. I hope your subcommittee will favorably consider these views.

Sincerely,

JOSEPH D. TYDINGS.

BALTIMORE, MD.

Senator JOSEPH TYDINGS,
Washington, D.C.:

The Johns Hopkins University urges that the Senate Subcommittee on Appropriations for Labor, Health, Education, and Welfare amend the action of the House Committee on Appropriations that reduces drastically the number of new NDEA title IV fellowships authorized for award in 1968. The primary objective of the program is to increase the number of doctoral students preparing for college or university teaching careers; a reduction at this time would be a tragedy because:

1. It is our greatest resource for training of college and university teachers in fields other than science or engineering.

2. The need for training of teachers is the greatest in the country's history.

3. Population statistics indicate that the number of college graduates reaching the age to begin graduate study will show a significant increase in 1968 and 1969.

4. It comes at the same time that the Woodrow Wilson Foundation fellowship program is to be altered.

5. The Office of Education will be unable to fulfill its commitment for programs approved previously, proposals approved in 1965 for a three-year period contained a provision for three-fourths of the original number to enter in 1968. Faculty and facility planning has been made on the basis of this commitment. It is hoped that the committee's deliberations will include full consideration of the results that will occur if legislation reducing the number of fellowships is enacted.

MILTON S. EISENHOWER.

FUNDS FOR TITLE III, NATIONAL DEFENSE EDUCATION ACT

Senator HILL. Senator Curtis, of Nebraska, has written me with an accompanying letter to him from one of his constituents over the reduction in title III, National Defense Education Act. The Senator's letter with the enclosure will be placed in the hearings for the guidance and information of the committee and the Senate.

(The material referred to follows:)

U.S. SENATE,
Washington, D.C., March 14, 1967.

Hon. LISTER HILL,

Chairman, Subcommittee for the Departments of Labor and Health, Education, and Welfare, Senate Appropriations Committee, Washington, D.C.

DEAR SENATOR: Enclosed is a letter which I have received from Mr. Floyd A. Miller, Commissioner of Education for the State of Nebraska. You will note he expresses concern over the proposed reduction in Title III, N.D.E.A. funds.

I am sending this letter to you for whatever interest it may hold, for it is my understanding that your Subcommittee will soon be considering funds for the Office of Education.

With every good wish, I am

Sincerely yours,

CARL T. CURTIS,
U.S. Senator.

STATE OF NEBRASKA,
DEPARTMENT OF EDUCATION,
Lincoln, March 7, 1967.

HON. CARL CURTIS,
*U.S. Senate,
Senate Office Building,
Washington, D.C.*

DEAR SENATOR: The Nebraska State Department of Education is aware of the President's proposed budgetary cut of Title III, N.D.E.A. funds, from \$79.2 million to \$47 million, for fiscal year 1968.

Because we consider Title III of the National Defense Education Act an effective program of Federal assistance afforded Nebraska elementary and secondary public schools, the Department, speaking for the Nebraska participating schools, strongly urges that you oppose this cut in the appropriation.

Funds from this program provide significant assistance to the State and our local school districts by strengthening instruction in mathematics, science, modern foreign languages, history, English and the arts, civics, geography, economics, reading and humanities. In Nebraska, the allocation has helped to equip and remodel laboratories and classrooms and to provide supervisory services in these critical subjects. It has given Nebraska and her children increased capability of supplying trained manpower of sufficient quality and quantity to meet the growing national defense needs of the country.

Economically, Title III funds have proved beneficial to Nebraska taxpayers. To provide the needed comprehensive educational program required in schools today, an added financial burden is placed on the local level. In those districts participating, a large portion of this burden is alleviated by Title III funds.

The impact it has had on Nebraska is implicit. The program in Nebraska has grown from 105 to 359 participating schools. A total of 41,000 pupils were benefited in 1958-59. In 1966-67, this total expanded to an impressive 293,994 pupils participating. Financial participation (Federal share) has increased from \$448,106 to \$619,939.

We are sure you fully realize that the budget last year (for Fy 1967) proposed a cut of \$54.4 million, but Congress, foresightedly, voted to restore the appropriation to its original \$79.2 million.

The N.D.E.A. program is not new. It has been accepted since 1958, and is vital to the economy and security of Nebraska and the United States. The need for adequate funding of the Title III program is especially urgent at this time. A time when Nebraska schools are being reorganized, and a time when new science and language laboratories and classrooms are being constructed and equipped.

Therefore, it is urged that you contact members of the Health, Education, and Welfare—Labor Appropriations Subcommittee, and request that the full authorized amount be appropriated to Title III of the N.D.E.A. program.

Sincerely yours,

FLOYD A. MILLER,
Commissioner of Education.

ACQUISITION OF EQUIPMENT AND MINOR REMODELING

Senator HILL. I have received a letter from Congressman Fred B. Rooney, of Pennsylvania, with an enclosure, concerning the need for an unreduced allowance for the acquisition of equipment and minor remodeling under title III of the National Defense Education Act.

(The letter with enclosure follows:)

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
Washington, D.C., June 20, 1967.

HON. CARL HAYDEN,
Senate Office Building, U.S. Senate, Washington, D.C.

DEAR SENATOR HAYDEN: I am enclosing a copy of a letter which I received from Mr. John E. Kosloski, Pennsylvania State Director of the Bureau of General and Academic Education concerning Title III of the National Defense Education Act.

As you will note from the letter, this program has been very successful in the State of Pennsylvania and in my Congressional district as well. Any cutback in funds would have serious repercussions.

I am hopeful that the Senate will restore the funds for this program which the House has recently cut. The National Defense Education Act authorizes up to \$120 million for such programs, yet the House approved only \$47 million.

Knowing of your sincere interest in this matter, I hope you will take the above into consideration.

With kind personal regards, I am

Sincerely yours,

FRED B. ROONEY,
Member of Congress.

COMMONWEALTH OF PENNSYLVANIA,
DEPARTMENT OF PUBLIC INSTRUCTION,
Harrisburg, Pa., May 4, 1967.

Hon. FRED B. ROONEY,
House Office Building, Washington, D.C.
(Attention of Mr. R. Anderson).

DEAR REPRESENTATIVE ROONEY: In answer to a telephone conversation with Mr. Anderson of your office, I submit the following statement:

The National Defense Education Act has been a program in which schools and/or counties have been able to receive reimbursement on costs of instructional materials.

The regional instructional materials center program in Pennsylvania has grown from three (3) centers in 1959 to a total of twenty-five (25) centers. They supply instructional materials and in-service instruction in the use of these materials. The centers vary from a simple film library to centers where there are films, filmstrips, models, exhibits, dioramas, museum kits, tape recordings and art exhibits.

Under the State plan for the National Defense Education Act, Title III, the regional instructional materials center has been able to acquire instructional materials to meet the demands of the schools participating in the regional instructional materials center plan. Only through federal funds could this program be possible.

It has been stated that the Elementary and Secondary Education Act in its various poverty acts would supplant the need for the National Defense Education Act. This is not factual since these programs deal with poverty and new innovative programs and since certain restrictions have been placed on the use of the monies under the Elementary and Secondary Education Act.

The instructional materials center in your area has been doing a very good job and with the aid of the National Defense Education Act it can continue. However, if these funds are curtailed, this program dealing with over 1,800,000 children in Pennsylvania will suffer since costs are prohibitive for a school district to provide this service.

Sincerely,

JOHN E. KOSOLOSKI,
Director, Bureau of General and Academic Education.

FUNDS FOR TITLE III, NDEA

Senator HILL. I have a letter from Senator Moss, of Utah, with his request that his letter together with the copy to a letter to him from Mr. Lerue Winget, deputy superintendent for instruction, be placed in the hearings.

(The material referred to follows:)

UNITED STATES SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C., June 5, 1967.

Hon. LISTER HILL,
Chairman, Health, Education, and Welfare-Labor Subcommittee, Senate Appropriations Committee, New Senate Office Building, Washington, D.C.

DEAR LISTER: The Utah State Board of Education has expressed extreme concern to me with regard to the level of funding for fiscal year 1968 for Title III

of the National Defense Education Act, which is a matching grant program for the purchase of equipment. As you know, the budget request was only for \$50 million, and this is the amount the House of Representatives has appropriated. This compares with \$82 million for fiscal 1967.

I recognize that in cutting Title III funds, the Administration hoped additional funds for the implementation of Title III of NDEA could be drawn from the expanded appropriation requested for Title I of the Elementary and Secondary Education Act. There is a considerable increase in the request for fiscal 1968 in this category, and considerable latitude in the use of these funds. However, with the many demands upon Title I funds, I do not believe we can be at all sure that Title III programs will receive the money they need to be effective.

Title III programs have been particularly well received in my state of Utah.

The number of subjects which can receive assistance has recently been increased, and the last session of the Utah State Legislature took action to make it possible for local districts to raise a greater amount of matching funds, so they are in a position to benefit from the program to a greater extent. Now that we are in a position to move, the state is faced with a substantial cut in the Federal funds it will receive in fiscal 1968.

I ask that a letter I have received from Mr. Lerue Winget, Deputy Superintendent for Instruction, Utah State Board of Education, which explains the Utah situation in some detail, be placed in the record of the hearings.

In addition, let me point out that the Bureau of the Budget has not requested any funds at all for one key area of Title III, the area of supervisory services. Last year, the Congress provided \$5.5 million to enable State Departments of Education to work with school districts in planning Title III programs, but this item is completely eliminated from the budget request this year. I realize it is expected that this can be handled under Title V of the Elementary and Secondary Education Act, but if so, Title V must be broadened and properly funded.

It seems clear to me, Mr. Chairman, that if we intend Title III of the NDEA program to be effective, we must see that it is adequately financed, and we are not doing this under the Administration budget requests, nor in the bill passed by the House of Representatives. I hope that the subcommittee will give careful consideration to this problem, and increase the appropriations to a realistic level which will allow the States to carry out this program, which has the confidence of our school teachers and principals.

Sincerely,

FRANK E. MOSS, *U.S. Senator.*

UTAH STATE BOARD OF EDUCATION,
OFFICE OF THE STATE SUPERINTENDENT OF PUBLIC INSTRUCTION,
Salt Lake City, Utah, May 22, 1967.

Hon. FRANK E. MOSS,
U.S. Senator From Utah,
Senate Office Building, Washington, D.C.

DEAR SENATOR MOSS: Dr. Bell has asked that I write you regarding our understanding the appropriations for funding Title III, NDEA, which will be considered in the Congress within a few days. We urge you to support a realistic appropriation to implement this important program.

Each year, during the past three years, our allotments have been reduced. No provision has been made for needs due to either increased enrollments or program extension. With five subject areas added (effective in our State in fiscal 1966) the funds were reduced from \$624,000 to \$587,336. In 1967, with economies added, funds were reduced to \$579,906. The proposal to reduce the federal allotments for acquisition and remodeling under provisions of NDEA, Title III, for 1968 is totally unrealistic. The addition of the industrial arts area should be accompanied by an increase in funds to provide for this relatively costly program.

It cannot be supposed that equipment and materials needs have been met since 1959. The backlog of need was too great and increased enrollments and requirements of improved programs have continued to exceed the funding provisions of the program. Many items acquired in the early years of the program have worn out and require replacement.

At this time we have project requests for fiscal 1968 which total over \$1,205,000. More than \$100,000 of this is in the area of industrial arts even though the information concerning this latter area came to us very late in the application period. If the proposed cut in NDEA, Title III, fiscal 1968 funds is made, we would be able to fund only about half of our projects.

We can support the principle of funding each year in terms of requirements of the program but the *requirements* should be based upon the *needs* and requests known to the states rather than by the arbitrary establishment of a percentage of increase or decrease which is unrelated to the actual situation.

It cannot be assumed that other federal programs will replace Title III. The emphasis in Title I, ESEA, is to be on providing *services*; Title II will aid in the materials program; but only Title III can provide needed audiovisual or specialized *equipment* and *minor remodeling*.

If the supervisory program of Title III, NDEA, is to be funded under Title V, ESEA, there must be adequate provision in Title V funding to assume this added cost and provide for continuity of services.

The following factors continue to be important in regard to Title III, NDEA:

1. Increased financial resources made available to local schools recently by Utah legislative action makes it possible for local districts to raise a greater amount of matching funds, thus they are now in a position to benefit from the program to a greater extent.

2. The federal-local matching principle provides incentive for local effort. This is preferable in many respects to outright grants.

3. Equipment and materials for improvement of programs in the new areas have been in short supply. They are just beginning to be generally available. The next two or three years will be extremely important ones in this acquisition program.

4. Title III of NDEA can provide equipment and minor remodeling which are not covered by provisions of the other federal support programs. Equipment and materials acquired under NDEA are intended specifically for classroom use and have a direct influence on the daily activities of students.

5. The provisions are not limited to any economic or cultural groups. They are intended to improve programs for all students.

We urge you to support this program with adequate funding. It is extremely important that the 1968 appropriation equal or exceed that for fiscal 1967. If all academic areas are to be included in Title III, NDEA, in fiscal 1969, a realistic appropriation must be made at that time to fund the program.

Sincerely,

LEUE WINGET,
Deputy Superintendent for Instruction.

CONSTRUCTION LOANS UNDER TITLE III, HIGHER EDUCATION ACT

Senator HILL. I have a letter from Senator Mark Hatfield of Oregon enclosing copy of a letter to him from the president of the Lewis & Clark College, Portland, Oreg., urging additional funds for construction loans under title III of the Higher Education Act of 1963.

(The material referred to follows:)

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C., May 15, 1967.

HON. CARL HAYDEN,
Chairman, Senate Committee on Appropriations,
Washington, D.C.

DEAR SENATOR: Enclosed is a copy of a letter recently received from the President of one of Oregon's outstanding independent colleges.

I forward it to you with the hope that your sub-committee will give appropriate consideration to this request.

Sincerely,

MARK O. HATFIELD, *U.S. Senator.*

LEWIS & CLARK COLLEGE,
OFFICE OF THE PRESIDENT,
Portland, Oreg., May 5, 1967.

HON. MARK HATFIELD,
U.S. Senator, Senate Office Building, Washington, D.C.

DEAR MARK: You are undoubtedly aware that the Office of Education is holding a very large backlog of applications for construction loans under the provisions of Title III of the Higher Education Facilities Act of 1963. We were recently advised that approximately \$130 million of qualified loan applications are on file, and more requests are being received every day.

You are probably also aware that the availability of Title III loan funds is a particularly critical factor for private institutions which do not have the option of bonding to assist them in constructing critically-needed academic facilities. For example, without a Title III loan, we would be unable to complete the Health and Physical Education Facility which is desperately needed because of the fact that our old gymnasium was destroyed by fire last September.

For these reasons, we respectfully urge you to support an appropriation of at least \$200 million for the HEFA Title III loan program during FY 1968.

Sincere best wishes,

JOHN R. HOWARD, *President*.

STATEMENT OF DR. LUMLEY

TITLE II

Senator HILL. Dr. Lumley?

Dr. LUMLEY. Senator, we want to pay tribute to you for the fact, we call it the Hill bill, we don't call it NDEA bill. This is one of the finest pieces of legislation passed, we believe.

I am not going to repeat what Dr. Fuller has said, and you have my full statement.

Senator HILL. We will have it appear in full in the record.

Dr. LUMLEY. Let me say this. We are concerned about title II of the NDEA, also, because there are additional categories in there. I know everybody is pleading for more money, and you have to divide just the amount of money that there is.

Senator HILL. It presents a problem.

TEACHER CORPS

Dr. LUMLEY. But we want to call your attention to the things that we believe are important, and that are going programs. Another one is the Teacher Corps, and, of course, the House didn't provide any funds in its bill, because it was not authorized. It is our understanding that the authorization, the new authorization for the Teacher Corps will go through the Congress this week.

Senator HILL. Well, the subcommittee was meeting this morning on it, and the full committee plans to meet tomorrow morning.

ELEMENTARY AND SECONDARY REGIONAL OFFICES

Dr. LUMLEY. And the House will be passing it today, we hope. So we are asking that this be funded, and there is another problem that we would like to call to your attention. We called it to the attention of the House, and that is the establishment of regional offices to control elementary and secondary education. We believe this is wrong. We believe we have got 50 State departments, and that 50 State departments should have the opportunity of operating educational programs, and we do not need to insert another layer.

Now in the report from the House committee you will find that they inserted, they reduced the money and they inserted a general language about regional offices. We would like to ask you to specifically say that there should not be a continuation of regional offices for elementary and secondary education or any expansion of the regional offices for elementary and secondary education, because this, as I say, inserts another layer, and it takes away, we believe, the authority of the States, and we believe that the States should be strengthened.

Diversity is the strength of American education, Senator, in our opinion.

Thank you very much.

Senator HULL. Thank you, Doctor, very much.

(Dr. Lumley's prepared statement follows:)

I am John M. Lumley, Director of the Division of Federal Relations of the National Education Association. The NEA, as you know, is an independent association of professional educators. Our membership includes educators in the public and private schools and colleges ranging from pre-school teachers to university presidents. Of our 1,025,000 members, 95% are classroom teachers.

Our testimony on Fiscal 1968 appropriations for the U.S. Office of Education is based on the policies of the parent Association as defined by the platform and resolutions adopted by the 7000 delegates to the annual convention of the Association.

The National Education Association believes that the social legislation enacted by the Congress during the past four years marks a significant turning point in the life of this nation. At long last, we have begun to accept the principle that the Federal Government can and should assist the state and local governments in providing the opportunity for every citizen to develop and use his talents, to lead a healthy and productive life, and to participate more fully in shaping the destiny of his country. Of particular importance is the commitment of the Congress to the goal of equal educational opportunity, as embodied in legislation affecting the public schools.

Within the span of a few short years, we have seen concrete results of this commitment. These new programs have kindled new public interest in the problems of the schools. Federal funds have been directed, in highly selective ways, to attack those problems. Countless young people who would never have succeeded in school are staying in school. Thousands of our teachers are upgrading their skills with federal help. The promise of the new federal commitment to education is attracting qualified people into the teaching profession.

There are some, however, who would hold back a bit on federal spending to see whether these programs are working. We know perfectly well that they are working. Some of the programs may be limping a bit, some need a major overhaul, but the solution of the problem is not to be found in reducing appropriations. In many cases, the problem is that the intent of Congress in passing the legislation is thwarted by inadequate funding. Administrative adjustments can be made as necessary without suspension or reduction of the appropriations.

In its legislative procedure, the Congress authorizes certain sums to be appropriated for the designated purpose. It is the belief of the NEA that the authorization reflects the minimum needs envisioned by those who write the legislation—not an arbitrary "ceiling" on the appropriation. Examination of existing programs shows that in virtually every case the intent of Congress would be realized (or at least substantially advanced) if the programs were fully funded. However, NEA is aware that the exigencies of the time prevent full funding.

While the NEA is gratified that HR 10196, as passed May 25 by the House does not represent retrenchment in educational funding, we are concerned about the following areas, which we believe worthy of priority consideration:

1. HR 10196 provides no money for the International Education Act of 1966. We believe this to be a grave error: all avenues leading to international understanding should be broadened, and the deletion of a relatively small appropriation to keep this avenue open is foolish in the extreme.

2. Title III of the National Defense Education Act is one of the most popular and successful education measures ever enacted. HR 10196 reduces the appropriation for this Title to a mere \$50 million—a fraction of the amount authorized by statute. This program is still needed for two urgent reasons: (a) the recent addition of new categories of instruction offers schools a chance to obtain equipment and materials and to perform minor remodeling with federal funds unavailable under any other statute; and (b) with withdrawal of federal matching funds would encourage state legislatures to reduce state appropriations for the purposes of this Title. Such a move by state legislatures—a real and present danger—would violate the precept of recent federal legislation which is designed to encourage maintenance and increase of state and local effort.

3. Title XI of the National Defense Education Act has provided institutes for thousands of teachers in critical subject areas. Congress has authorized a \$50 million appropriation for this Title, but HR 10196 appropriates only \$37,250,000

for Fiscal 1968. Again, the recent addition of new subject matter to this program demands full funding.

4. If the intent of Congress is to continue the life of the National Teacher Corps, as appears to be the case in HR 10943, the NEA would ask that the program receive adequate—not just token—funding. We believe that the Teacher Corps has had a rougher time in Congress than it deserves. The attached NEA survey indicates the degree of popularity enjoyed in the Corps in the field. In addition, we believe that this program is unique in its impact on the minds of young people who are deeply concerned about the educational plight of the disadvantaged, and that it offers master teachers a chance to convey their insights to a new generation of teachers. Also, we believe that this program, through its recruitment of dedicated persons, is an effective means to stem the flow of teachers from depressed neighborhoods into the suburbs. It is sound in concept, and we are heartened by steps being taken to improve its operation.

In closing, we would comment on what we consider a most unfortunate development. The U.S. Office of Education proposes to establish regional offices around the nation, larger in scope and authority than those which exist at the present time. The purpose of this move is, according to the Administration, to bring the U.S. Office "closer to the people," and to free the Washington staff of dealing with everyday local problems. It is argued that the Washington staff could spend its time analyzing existing programs, make adjustments and refinements where necessary, and plan new projects.

We say that this is foolishness. The establishment of regional offices and the supposed decentralization of authority will not insulate the Commissioner of Education and his top aides from problems in the field, phone calls and letters from frustrated and disgruntled schoolmen. In any event, we suggest that such insulation would probably serve only to remove policy-making from reality.

From the financial point of view, decentralization would be wasteful and inefficient. It is proposed that 955 persons be hired for the nine regional offices. A smaller staff could easily handle the administration of the federal programs in Washington and make field trips as needed. The modern jet aircraft can put the Commissioner and his staff on the scene of any crisis within a few hours.

We propose that this Committee insert language into the appropriation bill specifically prohibiting the staffing of regional offices for the U.S. Office of Education with personnel to administer and supervise elementary and secondary education programs.

[From the Congressional Record, Mar. 20, 1967]

APPENDIX

NATIONAL EDUCATION ASSOCIATION POLL SUPPORTS THE TEACHER CORPS

EXTENSION OF REMARKS OF HON. JOHN BRADEMAS OF INDIANA IN THE HOUSE OF REPRESENTATIVES, WEDNESDAY, MARCH 15, 1967

Mr. BRADEMAS. Mr. Speaker, I would like to call the attention of my colleagues to a recent statement by the National Education Association expressing full support for the Teachers Corps.

In testimony this week before the House Education and Labor Committee, John Lumley, director of Federal relations, said that the NEA has "supported, and continued to support the National Teachers Corps as an innovative experimental program to provide teachers for urban and rural schools with large concentrations of children from low-income families."

Mr. Speaker, the NEA speaks not only from what its representatives here in Washington see, but from reports from its nationwide membership. In particular, the NEA surveyed superintendents and principals who have Teachers Corps programs in their schools. Of 88 superintendents who responded, 80 found that the impression of their regular staff toward the corpsman was either excellent or favorable.

Of 196 principals responding to the same question, 171 gave a similar favorable response and another 18 found at least a neutral attitude.

Mr. Speaker, this is compelling evidence from the people in the field, from the men and women responsible for running our schools, that members of the Teachers Corps are doing their job and are well received by their fellow teachers. I can think of no higher praise for the Corps men and women than this tribute from their fellow teachers.

Under unanimous consent, I insert the NEA statement and a compilation of the results of their nationwide poll in the Record at this point:

TESTIMONY OF JOHN M. LUMLEY, DIRECTOR, DIVISION OF FEDERAL RELATIONS, NATIONAL EDUCATION ASSOCIATION, PRESENTED TO THE EDUCATION AND LABOR COMMITTEE OF THE U.S. HOUSE OF REPRESENTATIVES, MARCH 14, 1967

By focusing attention on the economically disadvantaged, the Congress has recognized the importance of education in overcoming the problem of the poverty cycle if each individual is to have an opportunity to achieve economic and social well-being. This recognition has activated public interest in an appreciation of the vital role of education. Although improved educational opportunities alone cannot solve all the problems faced by those who live in poverty, it is encouraging to note a national recognition of the fact that without improved educational programs none of the problems will be solved.

Unfortunately, the handicap of limited state and local financial resources has resulted in many school districts being unable to meet the special needs of the economically disadvantaged.

We have supported, and continue to support, the National Teacher Corps as an innovative experimental program to provide teachers for urban and rural schools with large concentration of children from low-income families. We believe that the transfer of this program from the Higher Education Act to the Elementary and Secondary Education Act is a wise and constructive action. NEA's support of the program is based on the principle of assisting school districts with large numbers of disadvantaged children to secure highly qualified teachers.

NEA QUESTIONNAIRE ON TEACHER CORPS

Questionnaires were mailed to the 111 school districts participating in the National Teachers Corps program. We received a response from 79% of the superintendents and 50% of the principals. A copy of the tabulated results is attached.

[From division of Federal relations, National Education Association, Feb. 17, 1967]

NEA questionnaires on Teacher Corps

1. How do you rate the preservice (summer) training program of the teacher corpsmen assigned to your school or school system? (Check one.)

Excellent:		
Superintendents	-----	31
Principals	-----	59
Adequate:		
Superintendents	-----	44
Principals	-----	73
Inadequate:		
Superintendents	-----	6
Principals	-----	12
Uncertain:		
Superintendents	-----	7
Principals	-----	46

2. How do you rate the inservice (follow-up) training that the teacher corpsmen are receiving at the cooperating college or university? (Check one.)

Excellent:		
Superintendents	-----	39
Principals	-----	73
Adequate:		
Superintendents	-----	39
Principals	-----	82
Inadequate:		
Superintendents	-----	5
Principals	-----	15
Uncertain:		
Superintendents	-----	5
Principals	-----	33

3. What do you see as the greatest benefit from the Teacher Corps program? (Check one.)

A source of personnel available now for work in schools serving the poverty areas:	
Superintendents -----	42
Principals -----	84
A future source of qualified teachers for work in schools serving the poverty areas:	
Superintendents -----	41
Principals -----	97
Other (please explain):	
Superintendents -----	5
Principals -----	19

4. How do you rate the motivation of teacher corpsmen compared with other beginning teachers in the schools serving the poverty areas? (Check one.)

Corpsmen are more highly motivated:	
Superintendents -----	60
Principals -----	111
No difference is observed between corpsmen and other beginning teachers:	
Superintendents -----	20
Principals -----	56
Corpsmen are not as highly motivated:	
Superintendents -----	4
Principals -----	21
Uncertain:	
Superintendents -----	4
Principals -----	8

5. In general, how would you describe the cooperation of corpsmen with your regular school staffs? (Check one.)

Corpsmen are working well with the regular staff:	
Superintendents -----	79
Principals -----	176
Corpsmen are not working well with the regular staff:	
Superintendents -----	3
Principals -----	10
Other (please explain):	
Superintendents -----	6
Principals -----	12

6. What is your impression of the attitude of your regular staff toward the Corpsmen? (Check one.)

Very enthusiastic:	
Superintendents -----	30
Principals -----	54
Favorable:	
Superintendents -----	50
Principals -----	117
Unfavorable:	
Superintendents -----	3
Principals -----	7
Neutral:	
Superintendents -----	5
Principals -----	18

7. Please explain briefly your answer in Question 6 above: (The following statements are indicative of the responses of the superintendents and principals.)

(a) "There have been many requests by regular teachers to have NTC members work with them in their classrooms."

(b) "Regular teaching staff is grateful for additional assistance, however, some teachers are envious of the fact that corpsmen are released two days a week to attend classes at the university while making the same salary."

(c) "The regular staff and the community are very enthusiastic."

(d) "Our teachers are pleased with the teacher corps and are real proud of the help the corps has given them. We would like to see the program continued."

(e) "At first there was distrust and suspicion. Most of it is gone. Still there is envy and it is based on the payment received to go to school."

(f) "At first they did not understand the purpose of teacher corps. This is understandable in view of all the delays involved. Congress could improve this for the future years by passing appropriations sooner."

(g) "Out staff is highly pleased with the enthusiasm and progress in two schools now using the NTC program. Both pupils and teachers are happy in the unusual accomplishments of this enriching approach to learning."

(h) "The interest of the corpsmen not as great as was anticipated. The cooperating college did not send us the team that we requested; therefore, we had to make numerous changes when they arrived in our system."

8. What are your plans for next year? (Check one.)

I plan to ask for additional corpsmen:

Superintendents -----	49
Principals -----	67

I plan to keep the present corpsmen for the second year and then ask for replacements:

Superintendents -----	26
Principals -----	74

I plan to keep the present corpsmen for the second year, but I do not think

I will ask for replacements:

Superintendents -----	5
Principals -----	14

I plan to dismiss the present corpsmen at the end of the first year:

Superintendents -----	2
Principals -----	3

Other (please explain):

Superintendents -----	5
Principals -----	33

NOTE.—If you are *principal*, please answer Questions 9 and 10, skip Questions 11, 12, and 13, and continue with Question 14.

If you are a *superintendent*, please skip Questions 9 and 10 and continue with Question 11.

9. How many Corpsmen are now assigned to your school?

-----Number of Corpsmen.

10. Including the Corpsmen now in your school how many Corpsmen could you use efficiently to supplement the services of your regular staff?

-----Minimum number.

-----Maximum number.

11. How many schools in your system now have Corpsmen?

-----Number of schools.

12. How many Corpsmen are now working in your system?

-----Number of Corpsmen.

13. What are your *additional needs* for Corpsmen?

-----Estimated number of additional schools.

-----Estimated number of additional Corpsmen.

14. Please give your evaluation and any other comments you care to make about the effectiveness of the Teacher Corps as a program for training teachers to work in poverty areas. (The following statements are indicative of the responses of the superintendents and principals.)

(a) "We believe the NTC can help us to do a better job in preparing children for productive learning. We think the school must do more than offer the students the traditional curriculum during the regular school day. Corpsmen can introduce these pupils to the world outside the routine and provide learning situations during the school day that are appropriate for the individual and small groups."

(b) "The National Teacher Corps members are highly motivated, concerned with the individual child, demonstrate concern. Good model for traditional teachers. Establish rapport with students."

(c) "The Teacher Corps members are much more highly motivated to work in poverty areas than the average teachers."

(d) "It is a very good program for training teachers to work in poverty areas."

(e) "Unlike teachers who are hired directly from teacher colleges or other teacher training institutions, Teacher Corps personnel have been prepared for some difficult situations which they are likely to find in the inner-city schools. Because they treat the children with more understanding, they are more likely

to reach the children and to do a more effective job than the teacher trained in a traditional manner."

15. Please give any additional comments about the usefulness of the work the Corpsmen are doing now. Include here your comments about any new services or programs that have been possible this year because of the help of the Corpsmen. (The following statements are indicative of the responses of the superintendents and principals.)

(a) "Our Corps members have served our area well in the short time we have had them. The interns have performed invaluable services in remedial programs for individuals and small groups. The contact with the community and its problems have been useful both to the community and to the Corps members themselves."

(b) "Such activities as home visits, creative writing, tutorial services, remedial reading instruction, and 4-H Club work are some of the services being performed by the Corpsmen. We find the members most willing to accept responsibility and to have a good attitude toward the children."

(c) "The Corpsmen on the whole are doing community work and have been able to greatly enrich and assist in our Title I work."

(d) "Use of NTC has enabled us to reduce the pupil-teacher ratio."

(e) "The shortage of teachers has been such that we had five classrooms without teachers from September to Christmas. We integrated the Corpsmen with a language arts remedial program under Title I. They have introduced new methods into teaching. They work both with the parents and with the children. They are very devoted and conscientious with the children. I only wish we had 25 instead of 5 that I might put them in all our schools. We have not had a single incident or problem with the Corpsmen. Please help to get more adequate funds so we can have more."

(f) "Because the interns and the team leader are not required to teach a full load of classes, they can offer individual help to some children. They are planning also to offer a new type of seminar in order to help some of our under-achieving students who might benefit from small group work. The preservice and inservice training stresses the use of innovative material and the Teacher Corps team is planning to experiment with the use of some new materials which might be valuable in this school and which might be valuable in similar schools."

STATE OF IOWA DEPARTMENT OF PUBLIC INSTRUCTION,
Des Moines, Iowa, April 6, 1967.

Mr. JOHN M. LUMLEY,
Division of Federal Relations,
National Education Association,
Washington, D.C.

DEAR MR. LUMLEY: During the past few weeks we have received a number of communications dealing with Titles III and X of the National Defense Education Act. Without exception, all have painted a rather gloomy picture concerning the future of this Act. May I prevail upon you to give a hearing to the following letter which sets forth the somewhat detailed attitude of the Department of Public Instruction of the State of Iowa.

It was the expressed purpose of the National Defense Education Act of 1958 (Public Law 85-864, as Amended) "to provide substantial assistance in various forms to individuals and to States and their subdivisions in order to meet the national defense needs of the United States." To insure trained manpower of sufficient quality and quantity the Act further declares that "The national interest requires that the Federal Government give assistance to education for programs which are important to our defense." If this was true at the time of the passing of this original legislation, it is even more of a necessity today.

The State of Iowa, the State Board of Education, and the Department of Public Instruction accepted the provisions of this Act and have made every effort to assure its successful implementation. This has been done through a very substantial matching funds effort and a strong buildup of personnel within the Department.

The said National Defense Education Act of 1958 as amended is designed, among other things, to meet national needs for personnel skilled in the areas of science, mathematics, modern foreign languages, and the other critical subjects in the public schools. Other critical subjects have been added until today Iowa has people assigned as consultants in the following critical subjects:

Mathematics
 Science
 Modern Foreign Languages
 English
 Reading
 Civics
 Civics
 Geography
 History
 Industrial Arts

As critical subjects were added to the Act proportional budget increases were not made but undivided effort of the State made it possible through matching funds to carry out the great need in these critical subject areas.

Not only has Iowa developed its personnel in the critical subject areas but through state effort has added numerous related area consultant to supplement NDEA personnel.

With this as a background I should now like to center our attention on the following proposals:

1. This Act is unique in that it is general aid to all pupils in the public schools and is not limited to the educationally or economically deprived. In reality it is for all boys and girls.

2. The Act should be continued for five years until June 30, 1973.

3. It should be left to Congress to establish the amounts of money to be authorized in each of these fiscal years. However, each time a new critical subject area is added a proportionate amount should be added to the appropriation. This is especially imperative should all subject categories be eliminated. If such an open-end approach be passed, it would become necessary that a definite category of ineligible materials be listed such as athletic and recreation materials.

4. Iowa protests vehemently any transfer of state administrative funds into any other title. We also object strenuously to state administration expenses being paid out of the Title III project funds and to the "in lieu" of separate funding in the amount used for the administration of the state plan for any year in a given state in the amount not to exceed 3% of the amount paid to the state under Title III for that year, or \$50,000, whichever is greater. If this recommendation is accepted by Congress, it would undoubtedly result in confusion, substantial reductions, and the possible elimination of this valuable and essential program.

5. One of the great contributions to education through Title III has been the fact that Iowa has had an excellent supervisory approach to all public schools. If provisions for this phase of the program were to be transferred to Title V of ESEA and not be earmarked, it could well be lost to Title III. This is because our State Title III, NDEA funds are appropriated by our General Assembly to match Federal funds allocated to Iowa for administration and supervision of the Title III program. If the matching provision is removed from the Federal requirement we will most certainly lose our State appropriation. The Iowa appropriation provides \$80,000 for fiscal 1967. Our

Governor has recommended an appropriation of \$125,000 for each year of the next biennium.

We are in a similar situation in regard to Title X, NDEA. If the Title X Federal program is eliminated and funds shifted to Title V, ESEA, without a matching requirement for funds spent in the Title X program, we will lose our State matching funds. Our State matching appropriation under Title X for fiscal 1967 is \$75,000. Our Governor has recommended that this be increased to \$80,000 for each year of the next biennium.

Our statistical program has been growing rapidly. Iowa is recognized nationally as having a strong program. We strongly urge that the Federal Title X program be continued and strengthened.

I realize this letter is lengthy but careful study of a program of this magnitude is necessary before drastic sweeping changes are made.

I am willing to appear at the hearings and testify on behalf of Title III, NDEA.

Sincerely yours,

PAUL F. JOHNSTON,
State Superintendent of Public Instruction.

FUNDS FOR TITLE I OF THE ELEMENTARY AND SECONDARY EDUCATION ACT

Senator HILL. I shall place in the hearing the letter to me from Mr. Raleigh E. Dingman, executive secretary, State School Boards Association, Inc., urging the allowance of an increase of \$500 million for title I of the Elementary and Secondary Education Act.

(The letter and enclosure follows:)

THE NORTH CAROLINA STATE SCHOOL BOARDS ASSOCIATION, INC.,

Chapel Hill, N.C., June 26, 1967.

Senator LISTER HILL,
*U.S. Senate Office Building,
Washington, D.C.*

DEAR SENATOR HILL: In my capacity as a member of the National School Boards Legislative Committee I certainly appreciated the opportunity of visiting with you on Tuesday, June 20th to discuss the priority education recommendations of our committee.

A major recommendation of our committee involves the need to fix the 1968 appropriations of Title I of the Elementary and Secondary Education Act at \$1,700,000,000. In this regard I thought you might be interested in seeing the enclosed state by state distribution of these funds under the \$1,700,000,000 level of appropriations. Please accept my appreciation for the opportunity of visiting with you. The courtesies shown both to me and Mr. Fulton Bacon of Basille, Louisiana were most appreciated.

Yours very truly,

RALEIGH E. DINGMAN,
Executive Secretary.

2656 LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS

*Estimated distribution of \$1,700,000,000 under title I, Public Law 89-10,
fiscal year 1968*

	<i>Estimated total State amounts¹</i>
United States and outlying areas-----	\$1, 700, 000, 000
50 States and the District of Columbia-----	1, 658, 558, 430
Alabama-----	62, 136, 646
Alaska-----	2, 626, 231
Arizona-----	12, 893, 554
Arkansas-----	38, 857, 647
California-----	96, 146, 212
Colorado-----	12, 825, 698
Connecticut-----	10, 987, 783
Delaware-----	3, 026, 736
Florida-----	49, 448, 350
Georgia-----	67, 774, 360
Hawaii-----	3, 434, 935
Idaho-----	4, 836, 639
Illinois-----	60, 264, 834
Indiana-----	25, 271, 385
Iowa-----	22, 920, 392
Kansas-----	14, 428, 063
Kentucky-----	50, 400, 015
Louisiana-----	55, 871, 142
Maine-----	7, 073, 843
Maryland-----	19, 996, 861
Massachusetts-----	20, 726, 004
Michigan-----	42, 860, 299
Minnesota-----	30, 117, 560
Mississippi-----	60, 049, 286
Missouri-----	37, 829, 155
Montana-----	5, 353, 585
Nebraska-----	11, 579, 541
Nevada-----	1, 421, 187
New Hampshire-----	2, 595, 529
New Jersey-----	31, 628, 336
New Mexico-----	11, 829, 019
New York-----	150, 718, 507
North Carolina-----	87, 932, 088
North Dakota-----	7, 799, 582
Ohio-----	49, 233, 732
Oklahoma-----	25, 926, 690
Oregon-----	10, 628, 581
Pennsylvania-----	67, 823, 165
Rhode Island-----	5, 043, 150
South Carolina-----	53, 010, 325
South Dakota-----	8, 931, 210
Tennessee-----	59, 842, 931
Texas-----	122, 630, 316
Utah-----	4, 373, 075
Vermont-----	3, 092, 333
Virginia-----	49, 106, 065
Washington-----	14, 264, 636
West Virginia-----	27, 562, 452
Wisconsin-----	24, 416, 020
Wyoming-----	2, 410, 308
District of Columbia-----	6, 599, 437
American Samoa-----	-----
Canal Zone-----	-----
Guam-----	41, 441, 570
Puerto Rico-----	-----
Virgin Islands-----	-----

¹ Estimated authorization, \$2,442,337,720 (\$3,000 p.a. income factor, A.F.D.C. 1965, 50 percent estimated State or National average C.E. per A.D.A., 1965-66, \$150,000 minimum administration) ratably reduced to \$1,700,000,000, with no State receiving less than the 1967 allotment for grants within the State.

FUNDING FOR EDUCATION PROGRAMS

Senator HILL. I have been furnished by Senator Wayne Morse, of Oregon, his statement with regard to funding the education programs. I shall place his statement in the hearings for the guidance and information of the committee and of the Senate.

(The material referred to follows:)

STATEMENT OF SENATOR WAYNE MORSE (D.-ORE.) BEFORE THE SUBCOMMITTEE ON LABOR-HEW APPROPRIATIONS, SENATE COMMITTEE ON APPROPRIATIONS

EDUCATIONAL FUNDING

Mr. Chairman, members of the subcommittee, the funding of educational programs authorized by the Congress is one of the most important responsibilities placed upon members of the Senate. As I review the estimates of the Administration in this area, I am filled with a deep concern. With your permission, I would like to share with you the areas of my concern and the reasons for my disquiet.

Many major pieces of educational legislation were enacted in the 88th and 89th Congresses. It is principally to the funding of these that I shall address myself, but as chairman of the Education Subcommittee I am the first to realize the importance of the great landmark legislation which preceded those years. I refer particularly to the Hill-Elliott Act, sometimes called the National Defense Education Act of 1958, and Public Laws 815 and 874, the impacted areas laws.

These three statutes have, as has the Smiths-Hughes Act of 1917, and its successor vocational education legislation, clearly demonstrated their usefulness, and their political strength through the support given by the American people to the programs they engendered.

Let us look, then, at the first of the proposals before you for the funding of the various titles of the National Defense Education Act.

NDEA ESTIMATES

Title II programs

First let me call to your attention the student loan provisions of Title II of the National Defense Education Act which was funded in fiscal year 1967 with an appropriation of \$190 million. The authorizations contained in the 1966 amendments to that act now permit funding of the direct loan program up to \$225 million. The legislative committee in arriving at the \$225 million figure recognized that even this amount would be insufficient to meet all of the needs of eligible students. The bill as passed the Senate therefore contained additional language authorizing a participation sales mechanism which, had it operated as forecast by the Administration, could have generated up to \$250 million of NDEA loan capacity. We were unable to retain this language in our conference with the House.

The Administration is still convinced of the utility of sales participation and that proposal is again before us this year in S. 1126, the Higher Education Amendments of 1967.

Testimony presented before the legislative committee last year by both the Administration and outside witnesses indicates clearly that there is a need in fiscal year 1968 for direct loan funds of a magnitude of up to \$250 million. I am at a loss to comprehend why this program carries only a Bureau of the Budget estimate to the Congress of \$190 million. I recognize that in the budget submission process frequently it becomes expedient for the Bureau of the Budget to make arbitrary cuts, but I plead with you gentlemen, that in the educational area we be guided by educational rather than budgetary considerations. I strongly urge you to give serious consideration to funding Title II student loans at the full authorization of \$225 million.

If Title II student loan programs were funded at the \$225 million level authorized by statute, I would point out to the subcommittee, as shown in the following table, that this addition of \$35 million to the estimates, as submitted, would enable 1,724 additional students from Alabama, 11,780 additional students from New York, and 1,027 additional students from Oregon an opportunity to achieve financing of their higher education costs. For the nation as a whole, if \$225 million is appropriated, 79,384 additional eligible students could have this type of financial assistance provided.

TABLE I.—*Number of eligible students in selected States under title II NDEA program, by appropriation level, 1968*

State	(a) Title II funding at \$190,000,000	(b) Title II funding at \$225,000,000	Increase (b-a)
Alabama.....	6, 898	8, 622	1, 724
New York.....	23, 487	39, 267	11, 780
Oregon.....	5, 498	6, 705	1, 207
All States.....	419, 000	498, 384	79, 384

Title III—Matching grants for equipment

When we turn, however, to Title III NDEA, the matching grant program for the purchase of equipment, it is here where we see undeniable evidence of budgetary reaction to the detriment of a program which has demonstrated that it has the confidence of our school teachers and principals.

In my own State, in this year, of the first 850 odd claims paid, Oregon local school districts over-matched the Federal contribution by \$862,112. That is to say, more than \$860,000 was spent by school systems for the purposes of Title III over and above what would have been requested merely to meet the 50-50 matching provisions. The authorization contained in the legislation for fiscal year 1968 for grants to the States for Title III purposes amounts nationally to \$96,800,000. The Bureau of the Budget estimate for this item is \$47 million, and this in the face of fiscal year 1967's appropriation of \$79,200,000. Requesting funds of only 48.5 per cent of the authorization, I submit, is not sound financing of a vital educational program. It is, rather, a program of attrition of the concept.

This is compounded by the failure of the Bureau of the Budget to provide any funding at all for the key area of Title III, the area of supervisory services.

Last year, the Congress provided \$5.5 million to enable State departments of education to employ the personnel who work with the school districts in planning and evaluating their Title III programs. Money for State supervisory services in connection with Title III expenditures is well spent if the most effective use of the money is to be made.

Elimination of this item is a vital blow at the effectiveness of Title III. It will be contended, I suppose, that these services can be provided if a broadening of Title V of the Elementary and Secondary Education Act is further authorized by the statute and fully funded. However, I ask you to question that representation.

I suggest that the better part of wisdom is to continue to fund services which have proven their worth until such a time as replacement mechanisms have been approved by the Congress and adequately funded by the Congress in a subsequent year. To hazard this important service upon a contingency is to run the risk of crippling a service in the event that actions in another area are not taken. I urge you, therefore, to restore the full \$10 million authorized for supervisory services. This will enable Title III programs to continue to operate effectively, and I strongly urge that most serious consideration be also given to funding the State grant operations at the level of at least \$90 million.

How effective is the Title III program? As I have indicated, it has strong support in my own State, as was made manifest to me on March 28, 1967 when I met with a group of Oregon superintendents. I thought you should also know that the legislative subcommittee, in connection with its oversight functions by letter dated February 28, 1967 has requested the Commissioner of Education to provide the Education Subcommittee with an analysis of the operations of the program. On March 13, by follow-up letter to the Commissioner, the subcommittee requested further information concerning this program. I ask unanimous consent that the two letters to which I have referred, together with the March 20 reply from the Commissioner of Education, appear at this point in my testimony.

U.S. SENATE,
COMMITTEE ON LABOR AND PUBLIC WELFARE,
February 28, 1967.

Hon. HAROLD HOWE II,
U.S. Commissioner of Education,
Washington, D.C.

DEAR MR. COMMISSIONER: In preparation for our hearings on legislative oversight, it occurred to me that you may wish to have your program people review their own operations to determine if you could be provided with informational material on fairly short notice which would, for example, with respect to the Title III NDEA program, permit you to present to the subcommittee an analysis of a sample of ten States covering the major geographical areas of the country, setting forth on a State-by-State basis, the characteristics of participating school districts as contrasted to those which have not participated.

Such an analysis might very well compare the two sets of school districts within a State to determine the role played by rural vs. urban factors; the per pupil annual support from State and local taxes; and the degree to which participation in one Federally supported program is correlated with participation in other Federally supported programs. The study might also review regional variations in degree of participation, and should, I think, contain comment upon the variations which might be attributable to such factors as the support given to the program by the State educational agency as reflected in staffing of State supervisory services in the area.

The type of support given to each of the disciplinary areas covered by the title may vary from State to State and within the school districts of a State. A discussion of the controlling factors, of which the foregoing are mainly illustrative, in such cases, could be helpful in suggesting to the subcommittee desirable modifications in the Title III program authorities, both as to coverage and in terms of the amount of authorization needed.

Since the Title III NDEA program is based upon a State plan procedure, it would be helpful in my view, for the analysis to contain a discussion of the elements common to such State plans and the degree to which variability exists with respect to the in-State operations.

Finally, I would hope that as part of the materials there would be set forth the degree, State-by-State, that requests for service under the title have had to be refused in fiscal year 1966 and fiscal year 1967 because of lack of funds

With kindest regards,
Sincerely,

WAYNE MORSE,
Chairman, Education Subcommittee.

U.S. SENATE,
COMMITTEE ON LABOR AND PUBLIC WELFARE,
March 13, 1967.

Hon. HAROLD HOWE II,
U.S. Commissioner of Education,
Washington, D.C.

DEAR MR. COMMISSIONER: In further reference to my previous letter of February 28, 1967 concerning legislative oversight inquiries into the operation of the Title III National Defense Education Act program, it would be helpful if your office could furnish, in addition to the materials covered in that letter, a report for fiscal years 1965, 1966, and 1967, an analysis in percentage terms of the funding of specific types of materials purchased under the authorities and a second analysis in percentage terms of the use of the money by discipline, by year.

We are interested in determining the relative use of money made in purchasing the various types of materials and we are also interested in determining the degree to which each high school discipline participates in this program.

If the information is not readily available for the United States as a whole, estimates of the latter might be prepared from the sampling of ten States as set forth in the earlier correspondence.

With kindest regards,

Sincerely,

WAYNE MORSE,
Chairman, Education Subcommittee.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
OFFICE OF EDUCATION,
Washington, D.C., March 20, 1967.

HON. WAYNE MORSE,
*U.S. Senate,
Washington, D.C.*

DEAR SENATOR MORSE: Thank you for your February 28 letter requesting information about the NDEA Title III program for the Senate hearings on legislative oversight.

The Division of Plans and Supplementary Centers in the Bureau of Elementary and Secondary Education has studied the categories of needed information described in your letter. The Division is confident that it can obtain the several types of information requested. Because all information is not presently available in the Office of Education, however, steps have been taken to obtain the additional information from State departments of education. Letters have been sent to the Chief State School Officers outlining the type of information needed. In addition, Office of Education staff persons are meeting with State NDEA Title III coordinators in five regional meetings this month. By fortunate coincidence we have the opportunity of explaining at these meetings the nature of the information needed.

The States have been requested to provide the requested data by the end of the month. The Office of Education is prepared to combine these data with other information available here and will submit a report to you shortly thereafter.

Sincerely yours,

HAROLD HOWE II,
U.S. Commissioner of Education.

Prior to the time your subcommittee completes its mark-up on the bill, I hope to have the complete report promised by the Commissioner in his letter of March 20. With your permission, I should like to forward this to you for inclusion in your hearings record, if it is received in sufficient time to enable its being included.

Mr. Chairman. I have dwelt at some length on the Title III NDEA program because if the Bureau of the Budget estimates are funded precisely as recommended, my State would be cut by \$321,750. What this means when the matching factor is taken into account is that instructional materials to the value of \$643,500 will be denied the children in the schools of my State. It is not a prospect that I can face with equanimity.

In the current fiscal year Oregon received some \$84,371 for State administration of the Title III programs. I understand that if the various changes proposed by the Executive Branch are adopted, this figure would be reduced in fiscal year 1968 to but \$19,157. This is a cut of \$65,214. My own position on this is quite clear. I shall do everything that I can to support full funding of educational programs because of my own conviction that educational considerations rather than budgetary considerations should determine Congressional policy with respect to the education of the boys and girls for whose benefit the public money is to be used.

Title IV—Fellowships

While I am pleased to note in the Bureau of the Budget estimates for 1968 that there is slightly over \$15 million increase over the \$80 million recommended, however, it should be borne in mind that this is about \$11 million less than could have been usefully supported by the Department. As a matter of fact, if the fellowship program under Title IV of NDEA were to operate at the level of the authorizations this would enable an additional 2,040 fellows to undertake graduate study. If your committee funds this vital program, in terms in our human resources, at only the \$96.6 million figure recommended by the Bureau of the

Budget, you will be closing the door to advanced study for 683 young men and women, including 18 students from Alabama, 167 students from New York, and 28 students from Oregon.

Why is this so important? Witness after witness has testified before our committee that teacher shortages, particularly in the higher educational area, are becoming increasingly acute.

We know that today there are approximately 6.05 million students enrolled in institutions of higher education. We also know the conservative projections indicate that a scant eight years from now almost nine million students will be attending our colleges and universities. This means that somehow, somehow, if we are not to dilute the educational opportunity to be afforded the three million additional undergraduate students, we will have to fund from some source the additional collegiate teaching personnel needed.

Title IV of NDEA is an excellent mechanism to accomplish this national purpose. It should be used to the full.

The funds recommended to the Congress by the Bureau of the Budget will permit some 5,460 students to start the long road to the Ph. D. Last year we started 5,775 on that route. I ask you, does it make good sense in the national interest to cut back, even by 315, training opportunities which will generate the teachers needed by the nine million college students of 1975? Ought we not now fund this program to its full authorization and thus increase rather than decrease training opportunities?

Title V—Guidance, counseling, and testing

Thirty million dollars is authorized in Title V of NDEA for grants to the States for guidance, counseling and testing activities. In my view, the authorization itself, in this area is insufficient. I am confident that after the Education Subcommittee's analytic review of Title V is completed there will be recommendations emerging for an increased funding of these functions.

I would point out that since the inception of the program, amendments to the title have increased the scope of its activities. What originally started out as a purely secondary school program was expanded by amendments to the enabling legislation so that Title V now encompasses activities in the elementary, secondary and certain higher education areas. The authorization of Title V at the time the amendments were taken was not increased to the extent that many on the Senate side would have wished. I am, therefore, somewhat concerned to note that the Bureau of the Budget recommendations in this area contemplate no expansion of the program, and, in effect, fund this program at little more than 80 per cent of its authorization.

We have added between 1966 and 1967 almost a million more youngsters to our elementary and secondary schools, nationwide. In 1968 it is anticipated that this number will be increased by an additional 800,000 students. By 1975 our projected enrollments indicate almost four million more youngsters in our public schools than were there last year.

How, then, can we justify holding appropriations for the guidance, counseling and testing functions at the same level of \$24.5 million that prevailed in 1967? Here, too, I ask you to consider the evidence carefully and ask yourselves the question of whether you can in good conscience recommend to the Senate that there be a retrogression in services to the boys and girls in our schools.

In this area, the ounce of prevention is less costly than the pound of cure. The motivation of a young person, which is strengthened, is less costly to evoke than is the cost of the repair work necessary to bring the dropout back into the school situation.

Title VI—Language and area centers

With respect to this program, which has recently been departmentalized in part as the result of amendments made in the International Education Act, which has yet to be funded, the current authorization would permit an \$18 million expenditure. The Bureau of the Budget has recommended that this be funded at an 87.2 per cent level. In view of the organizational changes which have occurred and in view of the expanded opportunities given through other areas in the International Education Act, which, if implemented by adequate funds, would enable progress to be made in this area, I urge only that if the full authorization cannot be supplied, at least the budget estimate be fully supported in the appropriations bill reported.

Title VII—Educational media research

The budget request for Title VII, the educational media research title of NDEA, is within \$600,000 of the full authorization. This represents a twelve per cent cut under full funding. I would urge that the \$5 million authorization be appropriated. The additional \$600,000 could well be spent on the training of teachers in the use of new media. Such training does not overlap the Title XI NDEA institutes authorization since the latter are for educational media specialists. It would be most salutary, in my judgment, to fund institute programs for classroom teachers so that they could be better prepared skillfully to use of the media in their subject matter courses.

Title X—Statistical services

With respect, however, to Title X, grants to the States for statistical services, I note that no money is being requested this year by the Bureau of the Budget on the grounds that this authority can be met under grants advanced under Title V of the Elementary and Secondary Education Act.

The authorization in NDEA for this program at present amounts to \$2.8 million. Since there are a great many areas which need funding under Title V of ESEA, I urge you to continue to use the Title X authorization until such a time as it is clear beyond a doubt that Title V of ESEA authorities are large enough to absorb this specific program.

I would further point out that when a program which has earmarked visible funds, is merged into the anonymity of a general authority, pressures are generated within each of the 50 States to reduce commitment to the previously visible areas.

I regard this as a most important program, since the statistics generated are the underpinning of the decisions we must make in determining educational policy. To run the chance of decreasing the validity of the basis of our policy-making, through cutting back on objective fact-finding, is to risk consequences in the aggregate which are far greater in cost than is this relatively small amount of \$2.8 million.

For this fiscal year of 1968 I therefore urge that you restore to the bill \$2.8 million, which is the amount that I am assured could be used with prudent care by the Department in carrying out the authorities of the title.

Title XI—Teachers Institutes for Advanced Study

The Bureau of the Budget has requested but \$35.5 million for this program whose authorization in the act stands as \$56 million. In effect, the Bureau of the Budget is requesting a 63.3 per cent funding of this program.

Yet this is a program which has operated very successfully and which enjoys great support throughout the country. I would point out that the money expended is being spent by the institutions of higher education in your States and that its benefits are multiplied many times over through the increased effectiveness in the classroom situation of the teachers who participate.

It will be said that it is the hope of the Administration that enabling legislation in Title V of the Higher Education Act will permit greater flexibility in the use of educational training funds and that in time it would be the hope of the Administration to phase this important part of NDEA out of existence.

There is a problem here, however, of which I think we are all cognizant. Once before, at the request of the Administration, we transferred from the Title XI institutes, training authorities, which we were assured could be met under other statutory authorities. Unfortunately, the program which should have provided the institutes did not have sufficient money in it to meet all the training needs, with the result that no training for one period of time was contemplated for school librarians. Many of us were in receipt of communications from these school librarians who were, understandably, very concerned. I do not think it is the part of wisdom for us at this time to permit such a situation again to develop with respect to other disciplines. We would be far better advised to fund this training program for teachers at the full authorization and continue to do so during any period of transition to other authorities. For that reason, I respectfully urge you to provide full funding for this program in the 1968 appropriations bill.

PUBLIC LAWS 815 AND 874

The impacted areas legislation, Public Laws 815 and 874, for the construction costs and the operation and maintenance costs respectively, of school districts, are no strangers to this committee. These are programs which, since 1950, have

enjoyed such strong Congressional support that their extension and expansion has carried with it many of our newer educational departures in legislation.

Our most recent expansions which brought the benefits of this legislation to the larger cities of this country, has not yet been fully recognized through adequate funding. It is, therefore, somewhat shocking to me that under P.L. 874 the budget estimate is lower than what was appropriated for fiscal year 1967.

The same is true with respect to P. L. 815.

Furthermore, the budget estimates are based upon the assumption that the Congress will permit the temporary provisions of P. L. 815 to lapse. I may not be a very accurate prophet with respect to educational legislation, but I think over my years in the Senate I have gained the experience necessary to qualify in political arithmetic. My very strong intuition tells me that before an Elementary and Secondary Education Amendments Act emerges from the legislative committee on the Senate side it will include provisions further extending the temporary provisions of P. L. 815. To assert otherwise would be to fly in the face of Congressional history.

If I am correct in this assessment, then it would seem to me that the choice before the Appropriations Committee, if it is to act in harmony with the sentiment of the Senate, would be whether to fund this program in the regular appropriations bill or whether it would under fund it with a very high probability approaching certainty that it would be necessary to come at a later date before the Senate with supplemental appropriations.

Included within S. 1125 the Elementary and Secondary Amendments of 1967, are recommendations regarding the continuation of one of the P. L. 874 programs, the School Disaster Act. I have already had representations as chairman of the Education Subcommittee from some of my colleagues that they are eager and anxious to broaden and to expand the coverage of that act, enabling additional schools to benefit from the protections it offers. I am sure the same representations will be made to you by your colleagues.

We all have a stake in this. A geographically small area through tornado or other local manifestation of nature's terrible energies can be devastated. Since this protection against natural disaster is based upon funds appropriated for P. L. 815 and 874, it is my belief that both programs ought to carry sufficient money so as to act as an adequate reserve against the contingencies of nature.

I would point out, once again, that not more money can be spent from these funds than is authorized under the formulas contained within the acts and if the funds are not needed they revert to the Treasury. The Congress, therefore, runs no risk in over-appropriating in these areas. The Congress could run a risk, however, in being held accountable if the funds are empty when they are most needed.

VOCATIONAL EDUCATION ACT OF 1963

While in general the budget estimates of almost \$200 million to fund grants to the States under the Vocational Education Act of 1963 is sufficient to meet the purposes of that legislation until such a time as the authorizations are increased, there is one area of funding under this authority which does cause me some concern.

No money is provided in the budget for the vocational work-study program, which last year received an appropriation of \$10 million. The argument is made that the Bureau of the Budget would prefer to concentrate its funding activities in this area of assistance to young people within the Neighborhood Youth Corps, authorized under the poverty programs.

This will mean that many programs in many of our States which have previously been funded will be forced out of existence. The authorization for vocational work-study, however, continues through fiscal year 1968. The basic legislation will come under the review of the legislative committee during this session of the Congress. The Administration bill, S. 1125, has been introduced. Hearings will be held. During the course of those hearings, I am confident that testimony will be elicited which will enable a Congressional determination to be made of our educational policy in this area of youth education.

It would be my hope that your committee would see fit to provide as an addition to the President's budget, at least the \$10 million that was provided last year, and that the phasing out of this program if it is to be accomplished, be done through the exercise of legislative authority rather than at the behest of the Bureau of the Budget.

HIGHER EDUCATION FUNDING

Mr. Chairman, I turn now to the funding of authorities contained in the Higher Education Facilities Act of 1963 and the Higher Education Act of 1965.

Higher Education Facilities Act of 1963: Funds for construction

The authorizing legislation contains an authorization of some \$728 million. The estimate submitted to the Congress by the Bureau of the Budget provides only \$390 million. Earlier I spoke of the anticipated enrollments expected by 1975 in higher education, estimated to be nine million students as contrasted to the present six million plus. As the budget estimates are reviewed by you in your mark-up sessions, I would have you ask yourselves this question: How long does it take to build an adequate academic facilities structure? From the time the decision is taken to the time that the doors are opened for the first class is at least three years. This is the lead time you must keep in mind. What you authorize for fiscal year 1968 has an important bearing on the number of youngsters a college can accommodate in fiscal year 1970 or 1971, and after. The \$728 million authorized by the legislation for fiscal year 1968 by no means will meet the needs which have been estimated by American Council on Education in testimony before my subcommittee. This testimony, which may be found on page 271 of our hearings record on the Higher Education Amendments of 1966, suggests a magnitude of total need of \$4.375 billion per year. I ask unanimous consent that the text of the entire letter under date of July 20, 1966 signed by Dr. John F. Morse, Director of the Commission on Federal Relations of the American Council on Education, appear in the hearings record at this point in my remarks.

(The letter follows:)

AMERICAN COUNCIL ON EDUCATION,
COMMISSION ON FEDERAL RELATIONS,
Washington, D.C., July 20, 1966.

Hon. WAYNE MORSE,
U.S. Senate,
Washington, D.C.

DEAR SENATOR MORSE: During the course of our testimony before your subcommittee on July 14, you asked us to comment on the testimony presented the previous day by President Bill J. Priest representing the American Association of Junior Colleges. Since the record of the hearings closes on July 21, we are able to give you only a partial response at this time. With your permission we should like to study the broad questions you asked and submit a memorandum to you later.

We agree with your view that the recent unity among the various components of higher education has contributed to the passage of important legislation. All of us should have an overriding concern with providing the best possible educational experience for the nation's youth. While divisive issues may from time to time arise, they are relatively minor alongside the need for educational cooperation and joint dedication to mutual goals.

We have not had an opportunity to study the proposal for a Community College Act. In general, the position of the American Council on Education has been to support higher education acts which provide participation opportunities for all institutions, both public and private, and at the junior college, senior college, and university levels. We have always supported inclusion of junior colleges in bills which, when introduced, failed to include them. We would want also to weigh very carefully the implications of an act limited to community colleges before giving it our support.

We have some reservations about President Priest's suggestion to alter the present formula in the Higher Education Facilities Act which sets aside 22 per cent of available construction funds for junior colleges. We question whether a rigid formula of this kind is necessary or desirable, but we are not aware that it has so far led to any inequities. However, unless the data available to us are wrong, we do not presently see any justification for increasing the earmarked percentage. It is true that junior college enrollments are increasing rapidly, but we can see no sign that they are growing any faster proportionately than are enrollments in four-year institutions and in universities. Figures taken from the Office of Education publication *Opening Fall Enrollment 1965* show that only 12.6 per cent of all full-time degree students are in junior colleges and that only 19 per cent of all college students are in junior colleges. This proportion has not changed greatly, for increased junior college attendance has

led in turn to an increased demand for expansion in senior institutions to accommodate junior college graduates. At the moment, therefore, we question altering the present formula, although we agree that the matter warrants further study.

We hope that prior to the opening of the next Congress, we may communicate further with you on this whole subject.

Sincerely yours,

JOHN F. MORSE,
Director of the Commission.

I would point out that it is the judgment of the educational authorities that there will be a need for new construction starts each year for the next ten years of somewhere between three and four billion dollars. Since the time that letter was received, I have come across no new evidence that would suggest that a lower figure can be anticipated. This item and the Title II authorization of \$120 million for graduate school facilities construction which the Bureau of the Budget wishes to fund only at \$50 million, are crucial educational policy decisions which must be made by the Congress.

I recognize the grave responsibility the President has for the national budget as a whole and what he believes can be absorbed by our economy. But I also am cognizant of my own responsibilities as a Senator and as chairman of the legislative subcommittee dealing with these matters, and I urge upon you that you review the budget estimates for school construction at the higher education level on the basis of the demographic facts and the economic benefits to the nation of higher education and that you fund these authorities in such a manner and at such levels as will enable us and our successors to keep our commitment to the American people that we intend to permit each young student to have access to education and training commensurate with his talents and abilities.

I have perhaps over-wearied the Senate by reiterating the point that expenditures in this area ought to be considered as capital investment. At the risk of repeating the obvious once again, and in the interests of our national security in the highest sense, I urge you to provide the full amounts authorized under existing law in the field of higher education construction.

HIGHER EDUCATION ACT OF 1965 PROGRAMS

I commend to your attention the committee print entitled, "Notes and Working Papers Concerning the Administration of Programs Authorized under Public Law 89-329, the Higher Education Act of 1965, during Fiscal Year 1966." The materials contained in the committee print, copies of which have been furnished the subcommittee, were brought together at my direction in order that we might in the legislative committee have a brief overview of how well these programs have gotten underway in the first year of their existence.

Title I—Continuing education

Under Title I of the Higher Education Act, \$50 million was authorized to be appropriated. Only one-fifth of that amount was appropriated in fiscal year 1967. For 1968 the Bureau of the Budget recommends to you only \$16.5 million. How was the \$10 million spent in fiscal year 1967?

The answer to this is set forth on pages 8 through 43 of the committee print. I will not weary the subcommittee with a recapitulation of the materials in the committee print, but I would like to cite three of the participating States' programs.

The State of Alabama received \$184,730 of the \$10 million appropriation. What was it spent for?

Among other items, public administration seminars for the range of State and local government personnel in cooperation with the University of Alabama, \$26,350. Public health instructor training courses, \$4,900. Public administration seminars for the range of State and local government personnel in cooperation with the Alabama League of Municipalities, \$43,200. Another \$48,700 was spent on courses for small business operators in fiscal management, and \$12,820 was spent to introduce courses in physical planning to local government officials.

In New York, which had \$541,940 allocated to it, \$49,527 went for a training program for department of buildings under the sponsorship of the City University of New York and New York City Community College; \$30,000 went to the College of Pharmacy of Columbia University for a speakers bureau on drug use; \$5,000

went for a seminar for government, labor and industry in meeting urban programs under the sponsorship of the State University at Albany; \$30,000 was spent by the State University at Buffalo in leadership training and planning for the Niagara frontier; \$58,000 was used by Syracuse University for seminars on county problems for officials and citizens.

In my own State of Oregon, which received but \$146,495, \$10,000 was spent by the University of Oregon in training courses of newly elected mayors, councilmen and commissioners in Oregon; \$35,656 for action programs under Oregon State University at Corvallis for small town local leadership; and \$8,022 was applied by the joint effort of the University of Oregon, Oregon State University, and Portland State University at conferences in urban planning for planning commissioners.

These are illustrative examples of the kinds of programs of immediate benefit to the men and women, to the citizens of our nation. There are a great variety of programs that could be supported under the authorities of Title I, but I think you will agree with me after you review the data set forth, that this program has justified its existence, and is deserving of far greater support than is contained in the one-third financing contemplated by the Bureau of the Budget. Citizens who are concerned about crime would surely applaud training programs for local law enforcement officers. Insurance men can see the need for courses directed to the education of firemen. This program is one which is controlled by the institutions of higher education in the States and the training it provides is responsive to locally felt needs. I urge its full funding.

Title II—College library assistance and library training and research

We turn now to Title II, the College Library Assistance, Library Training and Research title of the act. You will find a review of this program on pages 49 through 58 of the committee print.

The authorization for college library resources was established at \$50 million for fiscal year 1968. The Bureau of the Budget proposes that you appropriate one-half or \$25 million. Since I believe that the college library is at the very center and core of any higher educational endeavor, I cannot in good conscience do other than to urge that the budget estimates for this highly important program be fixed at the authorization ceiling.

I also urge that you restore to the full \$15 million of the authorization funds for library training and library research. Here the Bureau of the Budget recommends only 78.6 per cent of the authorization.

In testimony before my subcommittee, personnel shortages in the librarian field have been documented time and time again. It is only through provision of adequate financial resources that we can start to make a beginning in reducing the educational training backlog for library personnel.

Within Title II also is the item for cataloging of library materials by the Library of Congress, authorized at \$7.7 million for fiscal year 1968. Here the Bureau of the Budget is asking only for 51.4 per cent financing. I urge you to inquire carefully of the Administration representatives what possible factual justification they could have for a cut of this magnitude in this program. Either there have been developments since the enactment of the 1966 law which were not then apparent to the Administration, or budgetary considerations once again have been given primacy over the educational needs of our schools and colleges.

Title III—Strengthening developing institutions

Title III of the Higher Education Act is concerned with strengthening developing institutions. It is discussed on pages 62-92 of the committee print. Although this program carries an authorization of \$55 million, the Bureau of the Budget is asking for funding at only 54.5 per cent or \$30 million. A review of the programs, which were supported in the first year of the operation of this title, can support, in my judgment, the full funding needed if this program is to expand and to provide the types and kinds of services needed by so many institutions that now cannot be served. Only one small program is now funded in my State, yet I know that some of our recently established junior and community colleges which are geographically removed from the main stream of academic progress could usefully participate in this program.

Title IV—Student assistance

The student assistance title of the Higher Education Act, Title IV, has three parts.

Part A provides for initial economic opportunity grants authorized at \$70 million and funded by the Bureau of the Budget at but \$58.1 million. Continuing grants to support those individuals previously awarded this type of assistance are encompassed within the title. It was the judgment of the Department of Health, Education, and Welfare that \$110 million would be needed to meet these costs. Yet the Bureau of the Budget has submitted only \$97.5 million to meet what I assume must be fixed costs. Here I would suggest that the subcommittee might very well wish to make inquiry of the Bureau of the Budget regarding the basis of the reduced estimate. Was it based on later figures as to the number of youngsters who had dropped out of the program, or do they contemplate removing this type of assistance from a substantial number of young people? If the latter is the conclusion that is reached, then I can see no possible justification which in equity could be urged for the course of action pursued.

I am also very grieved to note that in Part C of Title IV, the College Work-Study Program, the Bureau of the Budget is willing to fund 70 per cent of the authorized amount. I do not see how this cut can be justified on the basis of a decreased need on the part of the students. I can only assume that considerations other than educational considerations played a part in the decision. If this is the case, I would urge that the subcommittee restore to the program at the very least the \$171,600,000 requested by the Department and preferably the \$200 million authorized by the Congress.

Title V—Teacher programs

Title V of the Higher Education Act contains teacher training proposals of two types: the National Teacher Corps and fellowships for teachers.

I have on a number of occasions on the floor of the Senate in recent months brought to the attention of my colleagues my strong support for full funding of the Teacher Corps. I can understand that until further authorizing legislation passes the Congress and is enacted into law, there is no basis at this time for the Appropriations Committee including an item for this program except on a contingency basis. I urge that language be written into the bill on the basis that S. 1125 has been introduced in the Senate and that companion legislation, H.R. 7819, has received the approval of the House Committee on Education and Labor, and it should be considered shortly on the floor of the House. I urge that no less than \$21 million, the figure contained in H.R. 7819 for fiscal year 1968, be provided on the contingency basis.

It is my own hope that when the legislation has cleared the Senate and the conference of the two Houses, a basis will have been laid for a much larger appropriation.

May I call to your attention the following comments taken from letters received by the Teacher Corps as to the merits of the program.

The first is from Mr. J. M. Caughman, Superintendent, Laurel Municipal Separate School District, Laurel, Mississippi. He says:

"This is one of our finest programs. But we could not have attempted it without the help of the Corpsmen, for we lacked the personnel and local finances that were necessary.

"We are very definitely going to make fine teachers out of the interns and we think we are going to be able to keep them all in Laurel when they are through with the Teacher Corps."

The second is from Mr. Walter S. Carter, Jr., Superintendent, DeSoto County Schools, Hernando, Mississippi. He says:

"We have 2 teams and both have been extremely successful. Their work with small troupes and sometimes full classes, has been in schools where 90% of the students come from poverty families.

"I would like to give a lot of credit to Memphis State University because their work in selection and training of these interns has given us two fine teams.

"When it first came out I was informed by board of education that we had no interest at all in Teacher Corps. But talks with people from Old Mississippi and from Memphis State encouraged me to try the Corpsmen on an experimental basis.

"Naturally, there was a little reservation on both sides at first . . . on the part of the regular teachers and on the part of the interns. But once it was established that it was a purely educational program, and once they really got down to work, the problems began to disappear. There was a growing respect on both sides.

"We hope the program will be financed and financed well. For it is one of the better programs that we know. Many others don't measure up to Teacher Corps. It was handled through the proper educational channels and there was never any confusion as to its objectives. It had its stops and starts and its bad days, but throughout it was a program to give an educational boost to kids who really need it.

"We started with good people and they have gotten good instructions from Memphis State University. And in the schools they have gotten close supervision from their team leaders, cooperating teachers and from the principals. And as a result of all this, we are going to produce a group of superior teachers."

Sentiments similar to these have been received from school districts all over the country. They constitute, in my judgment, a powerful testimonial as to the value of this program.

With respect to Part C of Title B, masters fellowships for prospective and experienced teachers, I note that the Bureau of the Budget proposes to fund this program at 12.5 per cent of the authorized figure. Again, I can only reiterate what I have said before in other connections—that if we are to meet the responsibilities in providing training for teachers, we cannot shirk our responsibilities to fund these programs to the level of need. I therefore urge that in reporting the bill to the floor it contain not less than a full appropriation of the authorization formula.

Title VI—Improvement of undergraduate instruction

Title VI of the Higher Education Act of 1965 brought to higher education the kind and type of matching grant support that has proved to be so successful at the elementary and secondary level under the Title III authorities of NDEA. As you know, the authorizations for Title VI are divided into three parts: \$10 million is authorized for TV equipment, \$60 million for other types of matching equipment and materials, with but \$5 million earmarked for institutes in the training of teachers in the use of these new educational media materials.

I would urge that this program, which has received much support in our legislative committee hearings, be fully funded at the authorized amount. I deplore the fact that the Bureau of the Budget for this new program is requesting but 14 per cent of the 1968 authorization for TV equipment, only about 21.6 per cent for the funding of the matching grants for other equipment, and but half of the authorized amount for institutes. These cuts cannot be justified on the basis of educational policy considerations. As is shown by the figures available to you, the Department of Health, Education, and Welfare requested from the Bureau of the Budget funding of TV equipment at 75 per cent of the authorization, funding of other equipment on the basis of two-thirds of the authorization, and funding at 100 per cent of the authorization for the institute portion of the statute.

Time and time again in our hearings witnesses urged that adequate funding be made available to institutions of higher education in order that those who teach our teachers may have an opportunity to acquaint themselves with more effective methods of transmitting their knowledge. Title VI, if properly funded, can, in my judgment, increase the efficiency of our teacher training programs and thus enhance greatly the quality of education that can be given to the boys and girls attending our elementary and secondary schools.

To use an agricultural analogy, money in this area is the seedcorn that will make for a bountiful harvest if the Congress is willing to accept the responsibility of a prudent farmer and invest to the degree necessary, in the equipment and materials and services of Title VI in order to increase the quality and quantity of our educational production.

LIBRARY SERVICES AND CONSTRUCTION ACT

The Library Services and Construction Act, as amended, funds four titles. The authorization for Title I, library services, for 1968 is \$45 million. Library construction is authorized under Title II at \$50 million. Inter-library cooperation, the substance of Title III, carries an authorization of \$7.5 million. Title IV, the specialized State library services, title, contains authorization of \$7.5 million for State institutional library services and \$4 million for library services for the physically handicapped. The Bureau of the Budget is requesting 77.7 per cent for the Title I authorization, only 54.3 per cent of the construction authorization of Title II, less than one-third or 31.6 per cent off the inter-library cooperation authorization, a woefully inadequate 28.2 per cent for State institutional library services, and a scant one-third of the authorization provided by the Congress for library services for our physically handicapped citizens.

I suspect that when the Bureau of the Budget prepared the estimates which are now being considered they were operating on the basis that deferral of construction was necessary to protect the public interest against inflationary price rises. I submit to you the situation at the present time should cause us to take a second look at that philosophy. Certainly, the Administration itself in recent weeks has reversed its policy as demonstrated by the release of highway construction funds and its long overdue permission to the Office of Education to exercise reallocation authorities under Title I of ESEA. I suggest to you gentlemen, therefore, that should you accept my recommendation that full funding be given to the construction programs you would not be going counter to action taken in other areas by the Administration. If your interrogation of the agency officials brings forth an unchanged position, then I ask you to consider most carefully the public interest question of whether as a nation we ought to adopt a policy which gives priority to our highways over priority to meeting the educational needs and requirements of our citizenry and their children. At the very least, gentlemen, I suggest that equality of treatment ought to be given to these objectives. I know that restoration of full funding to the Library Services and Construction Act would meet with the full approbation of the people.

FUNDING OF P.L. 89-10 ELEMENTARY AND SECONDARY EDUCATION PROGRAMS

Within the past several weeks the State educational agencies were notified of the final allocations under Title I of the Elementary and Secondary Education Act. These allocations distributed a fiscal year appropriation which amounts to \$1,053,410,000. However, the allocations which have been made represent only 74 per cent of the amount which the Congress authorized for this program and which many members of this body anticipated would be available.

In the 1966 amendments to Title I of the Elementary and Secondary Education Act we provided a formula which substantially increased the authorization for fiscal year 1967 and for fiscal year 1968. This was done through a precise formula which was based on identified poor children in accordance with census data, AFDC data and for other children who are classified as neglected, delinquent or foster children. The intent of these amendments was to increase substantially the amounts available to schools to provide programs for educationally disadvantaged children. The distressing fact of life is that the amounts which were recommended by the Administration and which are now available carry out only a fraction of the Congressional intent.

Last spring after the President submitted his FY 1967 budget to Congress, and the U.S. Office of Education advised the States of the amounts available, it was predicted that the appropriation request of the President would fund about 85 per cent of the authorizations contained in the Administration proposals in Title I for fiscal year 1967.

The Congress, in its consideration of the legislation, provided liberalizing amendments which increased the authorizations by \$125,000,000 beyond the Administration proposals. To be exact, the authorizations approved by the Congress amounted to \$1,430,000,000 and the authorizations proposed in the Administration bill were estimated at \$1,305,000,000. However, despite the fact that the Congress added \$125,000,000 in authorizations for programs designed to aid the children of poverty in their quest for educational equality, the appropriation request of the Administration remained unchanged.

The appropriation language which was included in the Appropriation Act for fiscal year 1967 also contained a substantive provision which in effect amended the provision of the statute which calls for ratable reduction of allocations which appropriations are less than the amounts authorized. This new provision stipulates that State allocations may not be less than the amount spent by the States during the preceding year, fiscal year 1966. The effect of this proviso is that about one-half of the States receive allocations based on the minimum stipulated in the Appropriation Act, while the other half are paid in accordance with the ratable reduction provision of the basic statute. Thus, instead of all States receiving 74 per cent of their entitlements, one-half receive in excess of this sum while the others receive 70 per cent of their Title I entitlements.

Across the country, the effect of the reduced appropriation is to curtail education projects for disadvantaged children. At the very time that these remarkably successful programs should be strengthened and expanded, many districts and State offices are finding that they are already overcommitted in their programs for the fiscal year and must reduce staff in order to stay within

the funds which are available. Others must forgo planned summer programs which are of special benefit to educationally disadvantaged children.

Last summer, local schools conducted summer programs for educationally deprived children which cost \$250,000,000 in Title I funds. The National Advisory Council on the Education of the Disadvantaged Children in its report released on November 25, 1966, made a special study of the summer programs conducted under Title I last year. The Council produced a very thoughtful report on these programs and concluded that a substantial portion of the Title I funds should be used in this manner. Two paragraphs from the Council's report summarize their conclusions:

"In summary, the Council believes that future summer programs, besides being important in themselves, can have special beneficial effects on the year-round success of Title I programs which can be attained in no other way. They provide an atmosphere of experimentation and innovation by freeing teachers from the rigid 'winter school' requirements of fixed schedules and prescribed texts. By reducing pupil-teacher ratios, summer programs invite the development of closer, warmer classroom relationships. Finally, and of prime importance, they enable intensive programs of teacher training. These important advantages lead the Council to believe that dollars thoughtfully expended on summer schools may be among the most productive dollars spent by Title I. Their full potential will be realized when successful practices discovered in summer are transplanted to 'regular' schools as year-round practices.

"The Council is deeply concerned for the future of summer programs. Many of the summer projects visited by its observers came into existence only because Title I money was appropriated by Congress too late for full use in the regular school year. Since these districts now have earlier assurance of funds for the new school year, many are planning to dispense with summer programs. This, the Council is convinced, would be a great loss, both to the pupils and educators. So strong is this feeling that the Council recommends an early decision by appropriate officials to reserve a substantial percentage of Title I funds for summer programs."

However, in light of the fact that the Title I programs for fiscal year 1967 got underway in the schools last September, most districts have used their funds and will be unable to continue the successful programs conducted last summer.

The programs which have launched by the nation's schools under Title I of the Elementary and Secondary Education Act are bringing about vast improvements in the educational services to disadvantaged children. The programs have been cited by the Commissioner of Education and by other leading authorities as remarkable for their effect on new educational practices for the poor children of the nation. Over eight million children benefitted from these programs in fiscal year 1966. We know that the number of these children who need to be served is even greater this year. This will not be possible because of the stretch-out in the use of funds this year for children served last year.

On a per capital basis the amount authorized for each eligible child in the program has actually decreased for fiscal year 1966-67. The formula last year produced an allowance of about \$210 per child, whereas the amounts available this year authorize approximately \$170 per eligible child in the formula. This is caused by the addition of 500,000 children to the formula without a proportionate increase in appropriations.

The fiscal year 1967 situation was further aggravated by a decision of the Administration, which was enforced until late in March, to withhold authority from the States to reallocate Title I funds to districts within the State whenever some districts with unused allotments would make funds available to other districts that need additional funds. This authority was clearly intended by the Congress to be used to offset the negative effects of ratable reduction. Last April, the States were assured by the Office of Education that this reallocation would ease the impact of reduced grants. Only in late March, because of budget decisions the districts been honored. How can we expect our schools to operate in this atmosphere of uncertainty?

In fiscal year 1968 the amendments provided by the legislation increases the family low-income factor under which children are determined to be eligible from \$2,000 to \$3,000. Another amendment provides a minimum rate of payment per child in the formula based on the national average expenditure per pupil, whenever the national average exceeds the average expenditure in the State in which an eligible district is located. Thus, the estimated authorization for fiscal year 1968 amounts to \$2.4 billion as compared with the current year authorization of \$1,430,000,000. The legislative committees of Congress which considered this

legislation gave extensive study to the formula as well as to the needs of educationally deprived children in our schools which the program is intended to help. The hearings were comprehensive and the conference committee thoroughly examined the formula before the final report was issued on October 18, 1966.

Against the authorization of \$2.4 billion, the budget request for fiscal year 1968 amounts to only \$1.2 billion. Thus, it is proposed that the program be financed for next year at 50 per cent of the authorized amount. In other words, it is proposed that we slide back from 70 per cent programs in 1967 to 50 per cent programs in 1968 at a time when we should be expanding our effort. The number of eligible children in the formula in fiscal year 1968 will rise from 6 million to 8 million with the result that the amount available per child will decrease again to a sum close to \$150 per child. Thus, in the three years the program will have been in operation the average amount available on a per capita basis for each educationally disadvantaged child in the formula will have gone steadily down from \$210, to \$170, to \$150, despite nominal increases in total appropriations.

One of the principles which has been emphasized by the Office of Education since the program was initiated is that there should be a substantial investment of resources for each child participating in the program. This point has been emphasized as a means of avoiding watered-down and ineffective programs. The history of recent years is replete with examples of education programs which have blossomed successfully on an experimental basis of adequate resources and then faded quickly when the services and resources were spread too thin over the children to be served. It is now well established that educationally deprived children require resources far in excess of those needed for the average, middle-class child. In recognition of this principle, the authorizing legislation was based on a principle of increasing the financial resources available to educationally deprived children. This principle is being discarded at the very time that we are beginning to see positive signs of success in our treatment of the needs of educationally deprived children.

The Commissioner of Education has now reported to the Congress on the analysis of the reports received from the States last fall covering the programs conducted during fiscal year 1966, the first year of the program. These reports reveal that State after State has indicated the success of its efforts. There follows a listing of quotations included in the report revealing the nature of changes which have come about as a result of the Title I programs.

WHAT THE STATES SAID ABOUT TITLE I

Following are excerpts from the evaluation reports submitted by State agencies:

Alaska: "The fiscal 1966 programs under Title I, ESEA have been most effective in enhancing educational opportunities for disadvantaged youth."

Arkansas: "Probably the most outstanding effect of Title I in general has been on educators themselves. Most have gained insight into the problems and needs of deprived children who in most instances make up at least one-third of the school population. The program has caused educators to assess their school programs from the standpoint of individual needs rather than the needs of the schools."

California: "School district personnel generally agree that the students improved attitude, motivation and interest toward learning. As these are important factors in learning, continued growth may be anticipated. Teachers also reported a positive change in their own attitudes towards these children and in their techniques in working with disadvantaged children."

Connecticut: "There is considerable evidence that teachers, administrators, and other persons associated with our schools feel that progress is being made in improving the educational opportunities of deprived children and youth."

Delaware: "... The children ... became more anxious to succeed at their own rate and they worked in small groups with much more ease and confidence ..."

District of Columbia: "In general, the allotment of large sums of money for programs providing individual services which have never been possible before has actually been a tremendous impetus and uplifting influence upon both students and professional staff of the District."

Florida: "This program is helping almost helpless children to gain confidence in themselves. It is affording opportunities for experiences that will 'widen their horizons' and help them to develop a new outlook on life."

Georgia: "Superintendents, principals, teachers, and Title I staff workers on the State and local level approach consensus in lauding the enhancement of educational opportunities, experiences, achievement, and general attitudes for Title I beneficiaries and 'spin off' benefits for all others in the educational institution."

Guam: "Title I has enhanced education of the deprived by providing educational experiences which would have not been possible due to financial conditions in our school system."

Hawaii: "The results have proven most beneficial to both teachers and students: since more time can be devoted to classroom preparations and the actual instructions, the quality of teaching improved."

Idaho: "Many children have had cultural experiences that might not have been available in their lifetime if it had not been for Title I."

Illinois: "Perhaps one of the most important accomplishments of Title I, is the improved attitude on the part of teachers and other school personnel working with these disadvantaged children."

Indiana: "... It seems that the future of the disadvantaged in these LEA's local educational agencies was heightened by their Title I programs."

Iowa: "The Title I project in some cases has had a significant impact on the entire staff of the LEA and will probably precipitate different types of experiences not only for the Title I children but for the other children in the local education agency as well."

Kansas: "For the first time, the underprivileged student could realize and take part in the cultural advantages of the more privileged group of society."

Kentucky: "There is no doubt that Title I projects are having a great impact on educational opportunities, experiences and general attitudes toward education as they relate to culturally deprived students."

Maine: "For the first time, in many instances, school personnel have been able to provide special attention to the educationally disadvantaged children, and to concentrate their efforts in an attempt to meet the needs of these children. The reported results have been most rewarding . . . Thousands of children have been helped."

Maryland: "Indications are that educational opportunities have indeed been extended significantly through this program and that it has provided experiences which should result in improved levels of achievement and in much improved general attitude toward education."

Massachusetts: "Insofar as it can be determined at this time, there is a very real 'carry over' of project benefits, both academically and attitudinally, from the period of project operation through present time."

"This is to us, one of the marked accomplishments of the program."

Michigan: "This was the first time the spotlight has been placed on the deprived youngster and as a result many teachers gave serious thought to improving methods in this area."

Missouri: "General observation of Title I projects in operation indicate there has been a substantial amount of good derived from the services provided through this program."

Mississippi: "This program has allowed and provided pupils a chance to learn by bringing about a better school environment and extending services heretofore unheard of in the schools of this state. Materials, equipment, improved facilities, food services, health services, and other specialized services have brought about an atmosphere more conducive to learning. Perhaps, of equal importance has been the capture of a new vision by teachers and this vision, this enthusiastic spirit, has been caught by pupils and translated into improved attitudes and a deepened interest in education."

Montana: "Nearly all schools reported good cooperation with and from non-public school officials. One school superintendent reported outstanding cooperation from the non-public school, and indicated that he believed the public relations for the public school were improved."

Nebraska: "Title I students and teachers seem to have an enthusiasm for learning that is not so apparent in the regular classes."

New Hampshire: "In this short period of time we have passed through the embryonic stage of a revolutionary educational venture. Much has been learned. We have become knowledgeable about the need of educationally deprived children: but in no way can we now consider ourselves experts, nor claim that these needs are completely fulfilled."

New Mexico: "If we are to grade ourselves on a total evaluation of our Title I program, we feel that we must give ourselves a superior rating."

Nevada: "Title I . . . has forced the public schools, colleges universities, and the lay public to become more aware of a certain segment of the student population of the nation's schools. As a result . . . we have seen evidence of many efforts to provide compensatory educational programs and services to a group of youngsters who otherwise would still have been floundering in the regular school program."

Oklahoma: "The ESEA program has allowed more flexibility in the providing of necessary facilities, personnel, materials and equipment required to provide equal and upgraded educational opportunities for the school children of this state. These deprived students . . . have shown much progress in achievement areas and an overall improvement of attitude toward school."

Oregon: "There has been gratification in the response and interest on the part of the children . . . Many school administrators and teachers became much more aware of the needs of these educationally disadvantaged children . . . If Title I continues over a period of many years the results should be excellent in bringing about improvement for the educationally disadvantaged children."

South Dakota: "Many excellent projects have been initiated . . . Particularly gratifying were those programs dealing with health, teacher aids, instructional secretaries, guidance, special education, pilot studies, and teaching load reduction . . . A well trained teacher with adequate facilities can be of primary importance if her time is not taken up with all sorts of administrative duties and her class load is within reason."

South Carolina: "For the first year of operation Title I has begun to provide high priority schools with the basic services and programs enjoyed as a matter of course by schools located in more affluent areas. There is a beginning being made toward a more sophisticated evaluation of the characteristics and needs of the deprived."

Tennessee: "The introduction of the Title I philosophy, which was not new to the teachers in the deprived schools but was simply a crystallization of their often verbalized aspirations for their pupils, schools, and communities, stimulated them to new action. Perhaps it is this revitalization itself that reflected the impact of Title I legislation most dramatically. . . ."

Texas: "There is no doubt that pupil achievement was heightened in many instances, in areas of behavior far beyond the traditional academic subjects."

Trust Territory: "The title I program is helping the deprived schools of Micronesia bridge the gap between isolated island life and the technological 20th Century. The program is providing teachers, supplies, and equipment, so necessary for creating educational opportunities for children that have little or no concept of what exists beyond the reefs of their small islands. . . . A number of projects have provided job-related experiences that were designed to help youth master social skills needed to become self-supporting, self-respecting, and self-directing."

Utah: "It would be safe to say that most of the projects showed greater than normally expected achievement, growth, and that a much greater breadth of experiences was provided for the educationally disadvantaged children than is normal. It caused educators to plan and evaluate more in depth than had previously been the case."

Vermont: "Remedial reading programs have shown substantial gains in reading skills and in overcoming a feeling of inferiority arising from underachievement."

Virgin Islands: "Title I motivated staff in changing complacent attitudes toward educational needs of disadvantaged children."

Virginia: "Title I is seen by the LEA as a tool for combating the drop-out problem by means of early remediation, attendance and counseling service and an offering of realistic vocational and industrial courses which will hold the child's interest through to graduation and provide him with skills to find a job after high school."

Washington: "It can be generalized that Title I has enhanced the educational opportunities, experiences, achievements and general attitudes (of children) towards education."

Wisconsin: "Across the country, from hard facts or soft data, test scores, teacher impressions, parent reactions, finger-printed and smudged notes from children, etc., the reaction to Title I in general has been that it has, in fact, had a significant impact on education, and that the disadvantaged children are being given a greater opportunity to participate in the existing educational system."

Within the first year of operation with the mammoth problems, hang-ups, and a majority of people who completely 'lost their cool,' the fact that Title I got off the ground, and in addition accomplished significant gains is pretty phenomenal."

Wyoming: "Title I has become very successful in changing the attitudes of children, teachers, parents, and administrators."

The question before us now is whether we are going to impose educational stalemate on the schools and pass out another rejection slip to the children of poverty. Every year that passes is irreplaceable. The time to educate children is while they are children. The clear message of our recent successful efforts to educate the children of poverty—both Project Headstart and Title I of ESEA—is that we must begin early in their life, provide continuous and enriched services, and that we must substantially increase the resources for these disadvantaged children. A national calamity awaits us if we persist in ignoring the educational needs of millions of children, whose educational failure will be on our hands if we let them down in this hour of educational crisis.

The sad situation that exists today is that vital education efforts for disadvantaged children are completely throttled by arbitrary decisions that ignore Congressional intent and which deny human needs. "Cost reduction" has taken over in the Administration to the point where major program decisions and policies are governed completely by the whims of budget examiners. Apparently the Congress must examine these decisions and make its judgment as to national needs and priorities.

Title II—School library resources, textbooks and other instructional materials

Title II, which funds library resources at the elementary and secondary level, is a program which is at the very core and heart of educational quality improvement. The authorization for 1968 for this program is \$154.5 million. The Bureau of the Budget has requested but \$105 million for the program, slightly more than two-thirds of the authorization. I strongly urge that this program be fully funded because until we can bring all of our school libraries to at least minimum standards we literally will be unable to accomplish much in the many other programs of educational revitalization which the record of hearings in the past few years indicates are needed.

Title III—Supplementary educational centers and services

With respect to Title III, supplementary educational services and centers, portion of the act whose authorization for 1968 was \$515 million, I think it is to be deplored that the Bureau of the Budget is asking for only a 46.6 percent or \$240 million in appropriated funds. Just the other day I received word regarding six Title III ESEA programs in my State that received funding under the January 1st deadline. At the same time I learned that eight programs had to be refused and four were placed in suspense. The additional funding I seek in this area would prevent the necessity next year of having to reject sound projects and programs.

This year in the January proposal review period, nationally there were some 1,723 programs presented to the Office of Education. Only 173 were funded. More than 500 had to be placed in the hold category. These school districts who have submitted proposals this year in good faith and at the expenditure of much time and energy of dedicated personnel cannot help but take into account the action of the Congress on this appropriations bill when they come to deciding whether the game is worth the candle next year. This program has begun very well. Do not quench its spirit and effectiveness by denying to it the financial resources which are authorized.

Title IV—Cooperative research

Cooperative research activities have no precise authorization ceiling. Seventy million dollars was appropriated last year. The Department of Health, Education, and Welfare could, with economy and efficiency utilize, in my understanding, at least \$138 million for fiscal year 1968 but the Bureau of the Budget is presenting estimates to you of only \$71,850,000. Since many of the research programs need serial financing from two to three years, holding the status quo in terms of appropriations means that new programs cannot be funded, if existing research is to be brought to its conclusion. I urge you to provide at least \$138 million for the program.

Title V—Strengthening State departments of education

When we turn to Title V, that aspect of ESEA which is devoted to strengthening the resources of State departments of education, we find that the Bureau of the Budget is proposing only 59.9 per cent of the \$50 million authorization. If the Congress is serious in its desire to bring into being a truly cooperative Federal-State system then it would seem to me incumbent upon us to provide the financing necessary in this educational area to accomplish our objective.

I would point out also that under the budget formulation the \$29,750,000 estimate is not the \$7,750,000 increase over the \$22 million appropriated last year that it would seem to be since that additional \$7,750,000 figure includes precisely the amount that the Administration does not propose to fund under State supervisory services and programs Title III and X of the NDEA. So here again, we see the budget estimates represent no progress in meeting the problems of educational financing at the State level despite the increase in schools and educational services needed because of population growth. The Bureau of the Budget is marching backward by giving you an estimate at least year's level. Do not forget that our programs of the past few years have created heavy demands upon the State educational authorities. Next year I am sure the load will be even heavier. Therefore, I urge the full appropriation of the authorization of this title.

Title VI—Education of handicapped children

Perhaps the most severe decrease made by the Bureau of the Budget this year is in the area which one would have thought would command our greatest sympathy. The new Title VI of ESEA, is a State grant, State plan program devoted to meeting the special educational needs and requirements of handicapped children including the provision of related medical and other services. In this title, the Bureau of the Budget made no mere 50 per cent slash, there is more than a 90 per cent slash. The Bureau of the Budget for Title VI recommends 9.7 per cent of the authorization for fiscal year 1968. This is an unconscionably low figure which deserves to be rejected. It is a reflection on the intelligence of those Senators who have long and wholeheartedly supported on bipartisan lines this recognition of the obligation we owe to the children who, through no fault of their own are unable to compete on an equal basis with other boys and girls because of their handicaps.

It has taken a long time and much work and effort on the part of a great many to gain recognition for special education. I hope you will crown that work with adequate recognition through full financing of this program.

Title VII—Dissemination of information

Mr. Chairman, Title VII of ESEA authorized a very modest \$2 million for a program of dissemination of information in the field of education. It was put into our legislative bill at the urging of one of your colleagues on the committee, Senator Yarborough. It had the full support of all of our members. But it is totally lacking, evidently, in any support by the Bureau of the Budget. No money is provided in the estimates for this item. I can only hope that this was an oversight. I cannot believe that an Administration, headed by a man who in the Senate and as President has consistently supported education, would have knowingly deleted an authorization for this purpose by withholding approval of its funding. The ten year or more lag in bringing research findings from the university to the elementary and secondary classrooms is due in part to the fact that dissemination of educational information is not strongly funded. I hope that you will include this item in your reported bill.

ADULT EDUCATION ACT OF 1966

Mr. Chairman, I bring this portion of my statement to a close by commending to you the funding at the \$60 million level authorized for the Adult Education Act. Here the Bureau of the Budget is proposing to you 73.6 per cent of the authorization but, Mr. Chairman, in view of the testimony taken before the legislative committee, it is my personal judgment that even the \$60 million authorization, if fully funded, would not result in any waste in this State matching grant, State plan program operation. Indeed, and again in my judgment, I doubt that the \$60 million would meet the type and needs in this area.

You have only to review, as I trust you will, some of the correspondence I have appended to my statement from the young men and women who are receiving help under the present program to become convinced of its value. In this connection, Mr. Chairman, I ask your indulgence that the letters I have attached

as an appendix to this statement be printed in full in your hearings record, because each letter in its individual way testifies far more ably than I can to the value of each of the programs I have discussed during the course of my presentation.

CONCLUSION

This completes my review of the appropriation needs as I see them. In concluding my statement to you I can only urge that as you weigh and analyze the multitude of considerations which have a proper part in coming to your collective decision on these segments of the total Labor-HEW appropriations bill you keep foremost in your mind's eye the impact of your funding decisions upon the aspirations of the boys and girls and young men and women whose lives will be affected by the preparation each receives during these years from kindergarten through graduate school. The shape and destiny of the 21st Century will be formed by them.

Our generation has great cause to be thankful for the foresight of our predecessors in these chambers. The steps that they took enabled us to serve in our time, our generation. We should do likewise for our successors.

Through the multitude of daily decisions which press upon us in myriad detail we sometimes forget that our prime responsibility transcends the immediate. We ought to take into account the decades which lie ahead in our planning and our funding.

Therefore, I urge you that most serious consideration be given to funding each of the educational measures at the fully authorized amounts. It is only in this way I feel that we can keep America strong. These young Americans are the only true natural resource of this country. Consider their welfare in your mark-up sessions and I am confident that the welfare of the nation will be well served.

Thank you.

FULL ENTITLEMENT FOR PAYMENTS TO SCHOOL DISTRICTS

Senator HILL. I have received a letter from Senator Kuchel, of California, regarding the necessity for appropriating sufficient funds to pay full entitlements under Public Law 874, for payments to school districts. I shall place the Senator's letter together with the enclosure in the hearings.

(The letters referred to follow:)

U.S. SENATE,
COMMITTEE ON APPROPRIATIONS,
Washington, D.C., June 29, 1967.

HON. LISTER HILL,
Chairman, Subcommittee on Labor-HEW Appropriations, U.S. Senate, Washington, D.C.

DEAR CHAIRMAN HILL: Because the congested schedule of your Subcommittee precluded appearance of additional witnesses, I am transmitting for its consideration the statement of the Superintendent of Schools in San Diego, Ralph Dailard.

The importance of continued Federal assistance for impacted school districts is so great that Superintendent Dailard desired to testify in person. He has knowledge based on experience in accommodating children with Federal "connections" in view of the concentrated service population in this area.

These views will emphasize further the urgency of adequate funding so that authorized assistance is forthcoming to school systems eligible under Public Law 874, about which I previously have written and which I feel strongly is an undeniable Federal obligation.

With warm regards, I am,

Sincerely yours,

THOMAS H. KUCHEL,
U.S. Senator.

Mr. Chairman and members of the committee, may I express my appreciation for the opportunity to present this testimony to the committee. The subject of

the testimony which I offer is not new to this committee. During the past 16 years, Congress has consistently provided financial assistance to local school districts for the education of children in Federal affected areas. The need for this assistance has been demonstrated beyond any doubt. The principle upon which assistance to Federally impacted areas is based has been supported by both political parties. Therefore, the testimony which I present at this time deals primarily with the need to support the impact area legislation at a level which is fair and equitable to the local school districts and the Federal Government.

During the past 16 years, assistance to Federally connected children under Public Law 874 has increased from 512,000 children at the outset to more than 2,000,000 in 1966. The growth of this program has approximated national trends, with the average Federal payments remaining at about 5% of the operating costs of the Federal impacted districts for the 16-year period. Likewise, the national average for Federally connected enrollments has held close to 15% of total enrollments. The San Diego school system, of which I am superintendent, is a prime example of the many Federally impacted school districts which would have suffered serious educational deficiencies without the assistance of Federal impact legislation.

San Diego is a "Navy town." The major military installations located in the city include the Eleventh Naval District Headquarters, Naval Hospital, Naval Training Center, Naval Supply Center, Miramar Naval Air Station, Naval Electronics Laboratory, and the Marine Corps Recruit Depot. It is home port for a large number of fighting ships—many now on active duty in the Pacific. Additional Navy and Marine installations are located in the area. Moreover, a number of industries such as General Dynamics, with its several local divisions; Rohr Corporation; Solar; and National Steel & Shipbuilding Company, have major contracts for military equipment and materials. Roughly 25% of the total population of the area is directly connected with the military. Likewise, almost 25% of the parents of the 150,000 students enrolled in San Diego schools either live on and/or work on Federally-owned property.

The San Diego City Schools' budget for fiscal 1968 contains anticipated income of \$5,825,478 from Public Law 874. This income is based upon 31,370 Federally connected pupils, 5,302 in the "A" category and 26,068 in the "B" category. *MAY I EMPHASIZE: If the Federal impact legislation is not funded it will not be possible to meet the deficit from either State or local sources. The only alternative will be to curtail educational services drastically.*

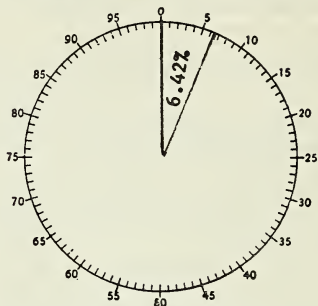
Federal impacted area legislation does NOT provide favored treatment to qualifying school districts. The San Diego Unified School District since 1950 has consistently provided educational services for Federally connected students who represented between 23% and 43% of the total student body. During this time Federal impacted area funds have provided only approximately 7% of the total annual school operating revenues.

I cannot emphasize too strongly that House Resolution 10196 now before the Senate Subcommittee on Labor must be funded for the full amount of \$461 million. If this were to be reduced to the proposed appropriation of \$416 million, it would produce about 11% less than the amount shown by careful estimates to be needed. San Diego would receive approximately \$700,000 less than the entitlement for the current year. Such a reduction would force a serious curtailment in educational services.

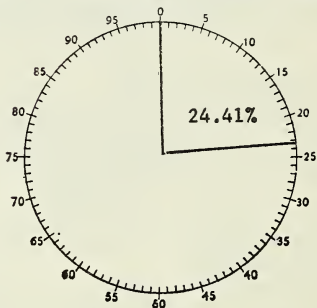
Federal support versus federally connected children

	Amount	Percent
Total 1966-67 budget for the operation of schools.....	\$81,621,207	100.00
Funds received from Public Law 874.....	5,241,888	6.42
Total number of children enrolled, K-14, October 1966.....	130,255	100.00
Number of federally connected children, 1965-67 school year.....	31,789	24.41

PERCENT OF DISTRICT OPERATIONAL FUNDS FROM P.L. 874



PERCENT OF K-14 ENROLLMENT FEDERALLY CONNECTED



I should also at this time like to ask that the committee support the other on-going Federal school-aid programs that will be before you for consideration in the near future, especially the Vocational Education Act and the National Defense Education Act.

Vocational Education Act and National Defense Education Act programs have made and should continue to make important contributions to the educational programs of this nation. They need to be continued at or above their present levels of support. The Vocational Education Act of 1963 has provided much of the flexibility that has been needed to bring school vocational education programs into line with the changing structure of the nation's employment needs. Funds are now needed to improve, strengthen, and expand these programs to prepare individuals to take their place as productive members of the economy.

The National Defense Education Act has been an important force for the improvement of instructional programs during the past nine years. In addition to providing substantial assistance to the various states, it has stimulated local school districts to increase their efforts to upgrade instruction.

During the period 1958-1967, California received \$36,000,000 in Federal funds from Title III of this act. Of this amount, \$16,000,000 was allocated to science programs for the purchases of equipment and instructional materials. The value of this program is evidenced by the fact that California school districts have already submitted projects requesting \$11,127,000 in Federal funds for the coming year. Any reduction in funds for this act will seriously retard the progress which has been initiated during the past nine years.

The Elementary and Secondary Education Act is beginning to have an impact upon some of our urgent educational problems. The unique needs of the nation's urban centers and the resulting requirements for special educational programs are constantly coming into sharper perspective. Through the Elementary and Secondary Education Act, these needs are beginning to be met. It is important that this momentum be maintained. Any curtailment now of the significant educational innovations represented by ESEA would be unfortunate both in terms of future contributions to the nation's productive economy and to the lives of countless thousands of disadvantaged Americans.

SCHOOL ASSISTANCE FOR FEDERALLY AFFECTED AREAS

Senator HILL. Senator Robert Griffin, of Michigan, has asked me to include a letter sent to him from Mr. William Simmons, deputy superintendent of the Detroit Public Schools, urging funds for full entitlement to school districts as provided under Public Law 874.

(The material referred to follows:)

DETROIT PUBLIC SCHOOLS,
DIVISION OF GOVERNMENTAL AFFAIRS AND FISCAL PLANNING,
Detroit, Mich., May 31, 1967.

HON. ROBERT P. GRIFFIN,
Senate Office Building, Washington, D.C.

DEAR SENATOR GRIFFIN: The Conference Report (To accompany H.R. 9481) on the Second Supplemental Appropriations, 1967, which passed both bodies during the past week deleted the \$20 million for payments to school districts for operation and maintenance under Public Law 874 included by the Senate in their second supplemental appropriation bill. These funds were to be used for payments to school districts which were qualifying for the first time under amendments to Public Law 874 that were enacted after July 1, 1966.

The Conference Report in discussing Amendment No. 22 does offer some possibility of including this amount at a later date. The language reads:

"Amendment No. 22: Deletes the Senate proposal to appropriate \$20,000,000 for payments to school districts for operation and maintenance. *The managers on the part of the Senate receded at the insistence of the managers on the part of the House, but without prejudicing action by the Senate on the Departments of Labor, and Health, Education, and Welfare appropriation bill, 1968.*"

This language suggests that the Senate may include this amount as an additional sum in the appropriation bill for the Department of Health, Education, and Welfare for 1968. While this language seems to offer such a possibility, I am certain the Bureau of the Budget will offer strong opposition to including a 1967 appropriation in a 1968 appropriation bill. I would think the best possibility is a strong push for the inclusion of the \$20 million requirement in a final supplemental appropriation for fiscal 1967. Such a bill will, in all probability, be necessary, and members of the appropriation committees could respond as quickly to requests from Members of Congress as they do to the Bureau of the Budget.

During the discussion of the deletion of this amount, it was suggested that this allocation was not necessary in that it would be a windfall to school districts that qualified during fiscal 1967, since it was not included as revenue in the fiscal 1967 budgets of the school districts. This, of course, is not the case because many of the school districts had included this amount on the basis of the authorization legislation as it was beginning to develop in the final form. These revenue losses to the budgets of the many school districts will mean deficits in most instances. In addition to the revenue losses based on the actual allocations to the eligible districts, most of these districts have spent considerable sums of money in conducting pupil surveys. The amounts expended for these surveys will also be reflected as additional deficits for the present fiscal year. I would point out, also, that the budget request for fiscal 1968 is far below the amount required to guar-

antee 100% payment. The Bureau of the Budget has requested \$416 million, the same figure as that requested for fiscal 1967, without regard to the changes in the authorization legislation, which requires an appropriation of \$461 million if proration to local school districts is to be avoided. The actual fiscal requirements for Public Law 874 can be verified through the Office of Education.

I am hopeful that positive action can be taken to reactivate the requests for this appropriation in such a way that it will become actual revenue in fiscal 1967 to the participating school districts. I am including a resume of the applicants under Public Law 874 throughout the state of Michigan in order to demonstrate the wide scope of activity under the law.

Should you require any additional information regarding the need for the appropriation or the actual administration of the law that might come from local school districts, I would appreciate having the opportunity to help develop the information. In the meantime, if there is anything that those of us who represent such school districts can do to be helpful, please let me know and I will pass the information on to the other participants. I would also add that this appropriation affects many states other than Michigan, and, once the other districts are aware that these funds have not been appropriated, I am sure that other Senators and Members of Congress will hear from the districts affected.

Sincerely,

WILLIAM SIMMONS.

SCHOOL ASSISTANCE IN FEDERALLY AFFECTED AREAS

Senator HILL. I have received a letter from Senator Thomas H. Kuchel, of California, urging the allowance of funds sufficient to pay full entitlements to federally affected areas under Public Law 874, as amended.

(The letter follows:)

U.S. SENATE,
COMMITTEE ON APPROPRIATIONS,
Washington, D.C., June 15, 1967.

HON. LISTER HILL,
*Chairman, Subcommittee on Labor, HEW Appropriations,
U.S. Senate, Washington, D.C.*

DEAR CHAIRMAN HILL: When Congress concluded action on the recent Supplemental Appropriations Act, it regrettably failed to provide authorized and needed funds for payment of full entitlements to Federally-impacted school district under the expanded program of assistance approved at the 1966 session.

The present Fiscal 1968 Budget estimates, as was noted in the House Appropriations Committee report, are identical with the Fiscal 1967 allowances.

Hence, there is a widespread concern, very common in a State with such a number and variety of Federal installations as California, about the inevitability that only pro-rata payments will be possible in the coming year. I feel this is sure to be regarded as a shameful breach of faith. Provision of such assistance to school systems educating substantial number of Federally-connected pupils is, in my view, an inescapable obligation.

Naturally, I have received many appeals from California school authorities for the assistance to which their districts are entitled. A fairly typical communication pointed up the problem in the following fashion:

"There apparently will be about a 10 percent loss in P.L. 874 support for the next fiscal year (1968) since the Bureau of the Budget's recommendation was followed rather than the estimated need which is \$44,800,000 higher. If San Juan must accept a pro-rata, which may be in excess of 10 percent for all applicants, we would expect to lose around \$150,000.

"We want to assure you that these losses are significant and serious to our educational program, and we would appreciate your efforts in seeking full entitlement appropriations to honor the obligations of the government to impact area school districts.

"In our district we are again experiencing growth in Federal activity and installations. McClellan Air Force Base and Sacramento Air Material Command have and are growing. We know you realize that educational funds should accompany this growth.

"We ask that you support our request by all means at your disposal. We are sure other school districts have brought this matter to your attention also. We want to emphasize that for San Juan United Schools, the loss of this money would be serious. San Juan is a large suburban community of very low assessed wealth. In school population we are eighth in size in California, but in wealth for the education of our children, we are in the lower quartile. We need every dollar that is due the district and cannot operate with deficiencies. We spend less money than almost any major district in California. We are heavily dependent on Federal impact aid as supported by P.L. 874. No other kind of educational aid can be substituted for this support."

I earnestly request your Subcommittee to examine closely the demonstrated requirements and apparent entitlements in reviewing H.R. 10196 in order that equity will be done.

With warm regards, I am,

Sincerely yours,

THOMAS H. KUCHEL,
U.S. Senator.

SCHOOL ASSISTANCE FOR FEDERALLY AFFECTED AREAS

Senator HILL. I have received the statement of Mr. Oscar Rose, superintendent of schools of Midwest City, Okla., urging the allowance of funds adequate to pay the full entitlements under Public Laws 874 and 815.

(The statement follows:)

STATEMENT OF OSCAR V. ROSE, OF MIDWEST CITY, OKLAHOMA

ADEQUATE FUNDING OF EDUCATIONAL LEGISLATION

I realize that this committee is charged with the appropriation responsibility of the Senate or The Congress. However, the long hours of work necessary to develop sound educational legislation authorization certainly entitles you to greater consideration for adequate funding of such legislation. Thus, in complimenting you for your excellent efforts, I would also like to comment on the imperative need for adequate funding of educational legislation. With reference to Public Law 815 I am sure members of this committee will receive messages of great disappointment because scarcely more than half the needed funds were appropriated to meet the legitimate claims to applicants for federal funds as of the first cut off date, February 20, 1967. While Public Law 815 does provide a system of priority in case of inadequate funds this is the first year for a good many years that it has been necessary to apply this provision in the approval of projects. Due to inadequate funding those school districts with a low priority will of necessity receive notices of their entitlement only to be told that their priority is not high enough to receive project awards at the present time. Many school districts have delayed the use of their own local funds in order to plan a total school construction program including *both local and federal funds* and thus all school construction will have been delayed. I believe that any member of The Congress can recognize the disappointment not only to school administrators charged with such planning but the citizens of this community as well. This problem will be further compounded following the second cut off date on June 30, which is just a few days from now.

After many years of experience with adequate funding of impact area legislation I have every confidence that the federal government will meet its obligations to the school districts qualifying under the one year extension of Public Law 815 and thus, no monies will ultimately be saved by the federal government. In view of this, I firmly believe that it is the part of wisdom to provide for proper planning in the field of school construction through at least a two year period of authorizing legislation and adequate funding on an annual basis.

With reference to Public Law 874, the greatest harm was done this year to the great cities in the question of inadequate funding. The House Appropriation report explains this lack of funding on the premise that such funds would be a "windfall" to these districts in that they did not budget these funds. The fact is that these school districts did expect to receive this money and accordingly expended their local funds in making the required surveys to establish

their entitlement. In talking to the Assistant Superintendent of Detroit, I asked that he give me his views in this regard and I am pleased to include his statement as a part of my testimony.

STATEMENT OF DR. WILLIAM SIMMONS

"I have been asked to discuss the need for a supplemental appropriation in the amount of \$20 million for fiscal 1967 to fund school district applications now on file in the Office of Education under the liberalized qualifying amendments that were enacted after July 1, 1967.

These amendments made it possible for school districts to qualify that heretofore had not been able to meet the percentage qualifying requirements. Actually, the provision that provided for a school district to qualify with 400 pupils or 3%, whichever is the lesser, would require \$17 million of the \$20 million. This amendment was designed to make possible the qualification of larger school districts with a substantial number of federally connected pupils. While the total number of eligible pupils in large school districts is substantial when compared with other school districts, the number of eligible pupils did not meet the percentage of the qualifying requirement because of the large total enrollments.

The appropriation bill for fiscal 1967 provided that the funds therein appropriated could not be used to finance changes in Public Law 874 that occurred after June 30, 1967. The Senate, in the second supplemental appropriation for fiscal 1967, included an item of \$20 million to fund the new eligible applicants. This item was deleted in conference committee. This means, of course, that, unless a supplemental item is included, the eligible districts will receive no funds for fiscal 1967.

During the discussion of the deletion of this supplemental item, it was suggested that the allocation was not necessary in that it would be a windfall to school districts that qualified during fiscal 1967, since it was not included as revenue in the fiscal 1967 budgets of the eligible school districts. This, of course, is not the case, because many of the school districts had included this amount on the basis of the authorization legislation as it was beginning to develop in final form. It must also be pointed out that in most of the large districts throughout the country budgets do not become firm until negotiations with teachers' and other employees' organizations are completed. The committee is aware, I am sure, that these negotiations often extend well into the budget year. Once the settlements are made with the organizations, budgets have to be revised to reflect final settlements and all new revenue possibilities. I have been advised in the specific instance of the School District of the City of Detroit that their revised budget for fiscal 1967 was not finally adopted until December 27, 1966. Since the revised budgets reflected the possibility of additional revenues under Public Law 874, failure to receive the funds anticipated will mean a deficit at the end of the school year that will necessarily have to be carried into the fiscal 1968 budget, with a resulting decrease in pupil services.

In addition to the revenue losses based on anticipated entitlements, most of these districts, because of their large pupil enrollment, have spent considerable sums of money conducting the pupil surveys that must support their applications. The amount expended for these surveys will also be reflected as additional deficits for fiscal 1967. Since these districts acted in good faith in conducting the pupil surveys and in filing applications which were obviously eligible on the basis of the survey findings, it would seem right that the funds should be made available to meet revenue needs of the school districts involved.

I would also point out that representatives of the large school districts detailed the need for the supplemental appropriation when they testified before the Subcommittee on Appropriations for HEW of the House Committee on Appropriations on the appropriation bill for fiscal 1968.

Further, it would seem that we may expect the same problem next year unless the Senate increases the 1968 appropriation for Public Law 874 as approved by the House. The House approved an appropriation in the amount of only \$416,000,000 for 1968, the same as the appropriation for 1967. Due to the inclusion of the large cities into the 1968 appropriation, school growth, and the continued increase in school costs, it is rather common knowledge that at least \$461,000,000 will be required to pay full entitlements under this public law. Thus, the applicants will receive a proration of 10% or more if this appropriation is not increased. I trust that members of this committee as well as the appropriation

committee will take full cognizance of the need for adequate funding of educational legislation and work diligently toward adequate appropriations which will eliminate the continued need for supplemental appropriations.

It has been a privilege to prepare this statement in the hope that it might be of some help in providing an adequately financed educational program for the Children of America.

SCHOOL ASSISTANCE FOR FEDERALLY AFFECTED AREAS

Senator HILL. I have the prepared statement of Mr. William Simmons, deputy superintendent of Detroit public schools, urging the subcommittee to approve a sum sufficient to pay full entitlements under Public Law 874, as amended.

(The statement follows:)

STATEMENT OF WILLIAM SIMMONS, DEPUTY SUPERINTENDENT, DETROIT PUBLIC SCHOOLS

Mr. Chairman and members of the committee, I am William Simmons, Deputy Superintendent of Schools in Detroit, Michigan. I am also staff chairman of the Federal Relations Committee of the Great Cities Research Council. This organization is made up of the sixteen largest school districts in the nation. We are all vitally concerned with the educational appropriations now being considered by the Committee.

I would discuss, particularly, the inadequate level of funding that is proposed for Public Law 874 for fiscal 1968 in H.R. 10196. I am also concerned that there is yet to be appropriated for the same law \$20 million for fiscal 1967 to fund eligible applications now on file in the United States Office of Education.

The large cities, with the exception of San Diego, San Francisco, and Philadelphia, did not qualify for assistance under P.L. 874 until the Congress in 1965 reduced the qualifying percentage for eligible pupils from 6% in school districts of 35,000 pupils or over to the 3% of the total average daily attendance used by all other school districts. An additional amendment enacted in 1966 changed the eligibility factor to read 400 pupils or 3%, whichever is the lesser for all school districts. The rationale for these changes was found in the fact that the large districts were educating exceedingly large numbers of federally connected pupils without financial assistance, simply because of size. In most instances the total number of federally connected pupils in the large districts was found to be larger than the total enrollment of the average sized school district across the nation. Briefly stated, the large districts that filed applications under the new eligibility requirements have qualified, at least for the record, for federal financial assistance.

The problem for those school districts which qualified for assistance for the first time in fiscal 1967, under the most recent amendments, was found in the complete lack of funding for such applicants in the appropriations for fiscal 1967. The Senate did include an amount of \$20 million in the Second Supplemental Appropriation, 1967, to fund the applications on file. The Conference Committee subsequently deleted this amount.

The Conference Report [to accompany H.R. 9481], in reporting on this matter, said:

"Amendment No. 22: Deletes the Senate proposal to appropriate \$20,000,000 for payments to school districts for operation and maintenance. *The managers on the part of the Senate receded at the insistence of the managers on the part of the House, but without prejudicing action by the Senate on the Departments of Labor, and Health, Education, and Welfare appropriation bill, 1968.*"

This language, hopefully, could mean, I assume, that the \$20 million needed to fund the eligible applications for 1967 could be appropriated in fiscal 1968 in whatever way the Senate felt was proper.

Realizing it is late in the fiscal year, I am aware that grants at this time to the eligible school districts might be viewed as budget windfalls. This, of course, is not the case for several reasons:

1. The school districts who filed under the new provisions included the anticipated grant in their revised budgets for fiscal 1967.

2. School district budgets in large districts are continuing budgets based on an accrual system of accounting. This means that when the anticipated

revenues do not materialize, a deficit occurs that must be carried into the next year's requirements with a resulting decrease in available funds.

3. School district budgets no longer can be opened and closed with firm, fixed appropriations on a date certain. Pressure from employee and community organizations requiring budget adjustments is a constant year-around matter. Negotiations in such matters cannot always be concluded in time to meet budgetary deadlines. In Detroit, our budget for fiscal 1967 was not closed until December 27, 1966. Our budget for fiscal 1968 is still open, and it appears that negotiations with our teachers will not be concluded until September or later.

4. The cost of conducting the necessary pupil surveys to meet application requirements in large districts ranges from \$50,000 to as much as \$125,000. Large expenditures such as these will further reduce available funds for pupil services.

While the discussion to this point has related to an appropriation deficiency for fiscal 1967, the points made are relevant to the amount shown in H.R. 10196 as the requirement for fiscal 1968. This amount, \$416 million, is far short of the \$461 million required to fund all known eligible applicants in fiscal 1968. The \$461 million would not provide the \$20 million for fiscal 1967 discussed above. The inadequacy of the amount recommended is noted in the House Report accompanying the bill.

I would be remiss if I did not comment on the inadequacy of all of the educational appropriations in H.R. 10196. These appropriations are far short of the authorizations enacted by the Congress.

School districts are now geared to handle the full level of funding. Without full funding many programs will be severely damaged and perhaps eliminated. The recommended appropriations will not provide local districts with the same level of funding experienced in fiscal 1967.

I appreciate this opportunity to appear before the Committee and stand ready to provide any detailed information that might be helpful.

SPECIAL EDUCATIONAL NEEDS OF EDUCATIONALLY DEPRIVED CHILDREN

Senator HILL. I have for inclusion in the hearings a letter from Senator Gordon Allott, of Colorado, urging the allowance of the full amount authorized for title I of the Elementary and Secondary Education Act, as amended.

(The letter referred to follows:)

U.S. SENATE,
COMMITTEE ON APPROPRIATIONS,
June 29, 1967.

HON. LISTER HILL,
Chairman, Labor-HEW Appropriations Subcommittee,
Senate Office Building, Washington, D.C.

DEAR MR. CHAIRMAN: I recently had an opportunity to sit down and chat with a prominent educator from Colorado, who represents the National School Boards Association. He raised some points which I felt needed exploring and which I thought I would pass along to you for whatever use the Subcommittee might wish to make of them.

As you are well aware, the full authorization for Title I of the Elementary and Secondary Education Act for fiscal year 1968 is actually \$2.4 billion, but the Administration has requested only \$1.2 billion for this purpose. Due to the change in the allocation formula last year and due to the expansion of some of the programs under the ESEA, Colorado's share of these funds will reflect only a minimal increase. In light of this, I would appreciate the Subcommittee's consideration to increasing these funds from \$1.2 billion to \$1.7 billion in order to maintain an appropriate rate of growth and in order to take care of the expanded programs.

Secondly, and I know this is a matter of deep concern to both educators and legislators alike, due to the ever-increasing interjection of the Federal government into state and local education programs, and the resultant increasing dependence of the state and local governments on these programs, a problem has developed with which I know you are thoroughly familiar. Because the appropriations come so late for these various programs and because the allocation down to the local school districts come even later, many school boards are re-

luctant to take advantage of them since they have to commit themselves early in the year, and often find out at a later date that the actual allocation of funds was on a lower level than originally proposed, I believe that this is a valid point, and it has occurred to me that the Subcommittee membership, as well as the full Committee membership, may very well want to give some thought to the resolution of this problem. Perhaps we might want to consider some approach which would take the ESEA out of the usual funding process and commence appropriating funds for this purpose a year in advance, so that, for example, in the FY68 bill for ESEA we would actually be funding the FY69 programs. Of course, it may be necessary to change the substantive legislation in order to accomplish this end, but in view of our responsibility for, in a sense, creating this problem in the first instance, I feel it is incumbent upon the Congress to offer a solution to this situation. In this regard, I note, with some interest, that the House Education and Labor Committee, in its report on H.R. 7819, Elementary and Secondary Education Amendments of 1967, page 1 (House Report 188), mentions its concern about this difficulty and suggests extending the Act's authorization through fiscal year 1969, to help alleviate this situation. Accordingly, it would be my thought that we might look toward inserting some language in the Committee Report pointing up this difficulty and offering some alternatives as a means of solving the problem.

Thirdly, you are very well aware of the hue and cry which has been raised by various state departments of education relating to the tremendous expansion of regional education offices. In this connection, I note the language contained on page 4 of House Report 271, stating the House Committee's concern about over-emphasis on regionalization. I add my endorsement to this language and hope that the Subcommittee may see fit to include something similar in its proposed report on the FY68 bill.

Many thanks for your indulgence and your consideration of these thoughts.
Warmest regards.

Sincerely yours,

GORDON ALLOTT,
U.S. Senator.

STATEMENT OF DR. ROBERT H. KENNEDY

PREPARED STATEMENT

Senator HILL. Dr. Kennedy?

Dr. KENNEDY. I am Dr. Robert Kennedy. I thank you for the opportunity.

Senator HILL. You are the surgeon. You can cut out and dissect all this matter.

Dr. KENNEDY. I would hope so.

Senator HILL. All right, sir.

Dr. KENNEDY. You have my statement.

Senator HILL. We will have it appear in full in the record, Doctor.

(The statement follows:)

I am Dr. Robert H. Kennedy, a practicing surgeon in New York for 45 years, prior to 1960. During part of this time I was professor of clinical surgery at New York University. Since October 1, 1960, I have been fulltime director of the field program of the Committee on Trauma of the American College of Surgeons under a grant from the John A. Hartford Foundation. The purpose of the grants is to improve the care of the injured in the United States and Canada.

Our work has been devoted chiefly to trying to improve first aid knowledge of the general public, all facets of emergency ambulance services and the treatment rendered in hospital emergency departments. The work of the Emergency Health Services Branch, Division of Direct Health Services, U.S. Public Health Service started in 1961 (1) With the similarity of purpose, we were led, naturally, to cooperate closely with them. It is for that reason that I appear before your committee to support the appropriations request of the Emergency Health Services Branch.

Four years ago, no state in the United States knew how many ambulances were in service, or what group was responsible for them. Training of the personnel is

more important than the type of vehicle or the equipment. If you do not know how many ambulances you have, it is hardly possible or likely that you have any idea of the number of persons who need training. This sort of research is needed woefully. We know now in 14 states something about the ambulance situation. This knowledge is not complete in a single one. In Nevada, for instance, we know something about the situation in 93 percent of the ambulance services. That is the largest proportion we know of among these 14 states.

Gathering these statistics has been done by many different individuals and organizations. The major load has been carried by what is now called the Emergency Health Services Branch. It was the loan of their own personnel to the State Health Departments in Maine and Rhode Island which accomplished the desired result in those states. It is mere economy and good sense that similar efforts be made in the 36 states about which we still know nothing. It will be accomplished within reasonable time only if funds are made available promptly through the Emergency Health Services Branch. The amount of money is pica-yune compared with the good to be accomplished.

Dr. William Haddon, Jr. and the National Highway Safety Agency have drafted 4.4.11, tentative Standards for emergency health services. These are being commented on by a great many groups by request, and will be issued as a directive in the near future. To make this effective requires much information, which has not yet been collected or made available. A considerable portion of this research could be done through State Health Departments. In the past four years, the Emergency Health Services Branch in several instances has made their trained men available for service with State Health Departments. The publications from Maine and Rhode Island on surveys of ambulance services and emergency departments are good examples. Similar research is needed vitally in every state. Federal money is required to do this. It is planned and proper that the Department of Transportation should call on the Emergency Health Services Branch to carry out this work. They should be doing it now to speed action in the near future. This is impossible without considerable increase in funds for this branch for the coming fiscal year. It requires funding of training courses for the men to be employed, allocation of men and funds to State Health Departments to gather and analyze data and funds for compiling and publishing results and recommendations.

Heart disease, cancer and stroke are being well looked out for by Congress at present. The fourth cause of death in the United States, injuries, comparatively has been almost forgotten. (2) This is documented well by 112,000 injury deaths last year, nearly half of them being due to the motor car, by two and a half million going to hospitals as a result of their injuries and by an economic loss of more than eighteen billion dollars in 1966.

From another point of view, the toll of injuries is far greater than fourth place, far more important in cold-blooded loss to the vitality of this nation than heart disease, cancer and stroke. Injuries are the major cause of death from one to 37. This removes the youth of the nation in its most productive years, whereas the other diseases concern mostly our older population, whose work has largely been accomplished. In addition, several hundred thousands of lives of unknown potentiality are permanently impaired before they can prove their worth to the country.

I believe that of the 112,000 lives lost following injury last year, literally thousands could have been saved by proper first aid by persons first at the scene of accident, by trained emergency care by ambulance personnel before a person is put into the vehicle and on the way to the hospital and by prompt, efficient treatment in the emergency department. This would be brought about by making certain that there is an open airway, that bleeding has been stopped by pressure, that fractures are properly splinted and, if cardiac arrest occurs, that external cardiac compression is used efficiently. The last procedure concerns also a great many sick persons seen on an ambulance or in the emergency facility.

Speed does not save life, but causes a greater number of deaths and disability in patients, crew, passing motor cars and pedestrians. The ability of the person present at the moment to do the procedure most necessary at that particular instant often counts for more in recovery than the most skilled treatment at the hospital later.

This requires knowledge of the situation in the particular community, as well as planning, organization and training. All of these things cost money and they will be realized only through the aroused interest of the leaders in each state, county and city. Advisory councils on emergency care are needed in every community, for this present chaotic situation can be changed only by efforts at the

grass-root level. The municipal or county health department should naturally be the doers, but they must be stimulated commonly by the State Health Department. The governor must play his part and the Federal government must furnish much of the funds.

The Emergency Health Services Branch of the U.S. Public Health Service has the experience and the know-how to accomplish these things. If members of Congress wish to ensure that the lives of all American citizens are protected from death and permanent disability as a result of injuries, they will see that staff and funds are made available this year to broaden the efforts of the Department of Health, Education and Welfare, particularly the priceless opportunity for salvage under Emergency Health Services provided through the State Health Departments. Only if adequate funds are provided can the Public Health Service properly support the highway safety programs of the Department of Transportation.

I doubt that there is a single area open to Federal investment where dollars will produce as much as this might.

SUPPORT OF APPROPRIATION REQUEST OF EMERGENCY HEALTH SERVICE

Dr. KENNEDY. I will excerpt it as briefly as I feel I can.

Senator HILL. All right, sir.

Dr. KENNEDY. I have been a practicing surgeon in New York for 45 years, up to 1960, and after that time I became fulltime director of the field program of the Committee on Trauma of the American College of Surgeons, under a grant from the John A. Hartford Foundation, with the one purpose of trying to improve the care of the injured in the United States and Canada.

Our work has been devoted chiefly to trying to improve first aid knowledge of the general public, all facets of emergency ambulance services and the treatment rendered in hospital emergency departments. The work of the Emergency Health Services Branch, Division of Direct Health Services, U.S. Public Health Service started in 1961. That was the year after we started. With the similarity of purpose, we were led, naturally, to cooperate closely with them. It is for that reason that I appear before your committee to support the appropriations request of the Emergency Health Services Branch.

TRAINING OF AMBULANCE PERSONNEL

Four years ago, no State in the United States knew how many ambulances were in service, or what group was responsible for them. Training of the personnel is more important than the type of vehicle or the equipment. If you do not know how many ambulances you have, it is hardly possible or likely that you have any idea of the number of persons who need training. This sort of research is needed woefully. We know now in 14 States something about the ambulance situation. This knowledge is not complete in a single one. In Nevada, for instance, we know something about the situation in 83 percent of the ambulance services. That is the largest proportion we know of among these 14 States.

GATHERING STATISTICS

Gathering these statistics has been done by many different individuals and organizations. The major load has been carried by what is now called the Emergency Health Services Branch. It was the loan of their own personnel to the State health departments in Maine and Rhode Island which accomplished the desired result in those States.

It is mere economy and good sense that similar efforts be made in the 36 States about which we still know nothing. It will be accomplished within reasonable time only if funds are made available promptly through the Emergency Health Services Branch. The amount of money is picayune compared with the good to be accomplished.

TENTATIVE STANDARDS FOR EMERGENCY HEALTH SERVICES

Dr. William Haddon, Jr., and the National Highway Safety Agency have drafted 4.4.11, tentative standards for emergency health services. These are being commented on by a great many groups by request, and will be issued as a directive in the near future. To make this effective requires much information, which has not yet been collected or made available. A considerable portion of this research could be done through State health departments. In the past 4 years, the Emergency Health Services Branch in several instances has made their trained men available for service with State health departments. The publications from Maine and Rhode Island on surveys of ambulance services and emergency departments are good examples.

NEED FOR RESEARCH

Similar research is needed vitally in every State. Federal money is required to do this. It is planned and proper that the Department of Transportation should call on the Emergency Health Services Branch to carry out this work. They should be doing it now to speed action in the near future. This is impossible without considerable increase in funds for this branch for the coming fiscal year. It requires funding of training courses for the men to be employed, allocation of men and funds to State health departments to gather and analyze data and funds for compiling and publishing results and recommendations.

DEATHS CAUSED BY INJURIES

Heart disease, cancer, and stroke are being well looked out for by Congress at present. The fourth cause of death in the United States, injuries, comparatively has been almost forgotten.

Senator HILL. Injuries.

Dr. KENNEDY. This is documented well by the 112,000 injury deaths last year, nearly half of them being due to the motorcar, by 21½ million going to hospitals as a result of their injuries, and by an economic loss of more than \$18 billion in 1966.

From another point of view, the toll of injuries is far greater than fourth place, far more important in coldblooded loss to the vitality of this Nation than heart disease, cancer, and stroke. Injuries are the major cause of death from 1 to 37. This removes the youth of the Nation in its most productive years, whereas the other diseases concern mostly our older population, whose work has largely been accomplished. In addition, several hundred thousands of lives of unknown potentiality are permanently impaired before they can prove their worth to the country.

I believe that of the 112,000 lives lost following injury last year, literally thousands could have been saved by proper first aid by persons first at the scene of accident, by trained emergency care by ambulance personnel before a person is put into the vehicle and on the way

to the hospital, and by prompt, efficient treatment in the emergency department. This would be brought about by making certain that there is an open airway, that bleeding has been stopped by pressure, that fractures are properly splinted, and, if cardiac arrest occurs, that external cardiac compression is used efficiently. The last procedure concerns also a great many sick persons seen in an ambulance or in the emergency facility.

EXTERNAL CARDIAC COMPRESSION

In fact, external cardiac compression, sometimes known as closed cardiac massage, is probably the greatest reason we have for training people so that they do know what to do in that instance, because there can be a considerable proportion of these brought back to useful life.

Now speed doesn't save life, but causes a great number of deaths and disability in patients, crew, passing motor cars, and pedestrians. The ability of the person present at the moment to do the procedure most necessary at that particular instant often counts far more in recovery than the most skilled treatment at the hospital later.

This requires knowledge of the situation in the particular community, as well as planning, organization and training. All of these things cost money and they will be realized only through the aroused interest of the leaders in each State, county, and city. Advisory councils on emergency care are needed in every community, for this present chaotic situation can be changed only by efforts at the grassroot level. The municipal or county health department should naturally be the doers, but they must be stimulated commonly by the State health department. The Governor must play his part and the Federal Government must furnish much of the funds.

The Emergency Health Services Branch of the U.S. Public Health Service has the experience and the know-how to accomplish these things. If Members of Congress wish to insure that the lives of all American citizens are protected from death and permanent disability—

Senator HILL. You mean we are under 37?

Dr. KENNEDY. There is still plenty in the older age.

Senator HILL. I understand. I understand.

NEED FOR ADEQUATE FUNDS

Dr. KENNEDY. As a result of injuries, they will see that staff and funds are made available this year to broaden the efforts of the Department of Health, Education, and Welfare, particularly the priceless opportunity for salvage under emergency health services provided through the State health departments. Only if adequate funds are provided can the Public Health Service properly support the highway safety programs of the Department of Transportation.

I doubt that there is a single area open to Federal investment where dollars will produce as much as this might.

Senator HILL. In other words, we would get real dividends on this, wouldn't we?

Dr. KENNEDY. I think we would, Senator.

Senator HILL. We sure would, real dividends. Well, we want to thank you gentlemen very much. You have brought us some mighty

good statements. The first time you have been with us, isn't it, Doctor?

Dr. KENNEDY. Beg pardon?

Senator HILL. You haven't been with us but one time before?

Dr. KENNEDY. Two years ago.

Senator HILL. You didn't have any accidents in this last year?

Dr. KENNEDY. Not personally, but I am still waiting for it.

Senator HILL. All right. Mighty fine to have had you here. Mighty fine. We appreciate your statement very much. Thank you.

VOCATIONAL EDUCATION WORK-STUDY PROGRAM

Senator HILL. I have received a letter from Senator Len B. Jordan, of Idaho, regarding funds for the vocational work-study program authorized by the Vocational Education Act of 1963. I shall place Senator Jordan's letter, together with the enclosures, in the record for the information and guidance of the committee and of the Senate.

(The material follows:)

U.S. SENATE,
COMMITTEE OF INTERIOR AND INSULAR AFFAIRS,
June 15, 1967.

Hon. LISTER HILL,

Chairman, Departments of Labor and Health, Education and Welfare and Related Agencies Subcommittee, Senate Appropriations Committee, New Senate Office Building, Washington, D.C.

DEAR MR. CHAIRMAN: As you are aware, the House of Representatives has recommended the transfer of \$10 million from the Office of Economic Opportunity's appropriations to the vocational work-study program administered by the Office of Education under the Vocational Education Act of 1963.

I wish to advise you that I strongly support this action and earnestly hope that the Senate Appropriations Committee will give it every consideration.

Vocational education authorities in my state of Idaho have expressed grave concern to me over the proposed phase-out of work-study under the Vocational Education Act and its absorption into the in-school program of the Neighborhood Youth Corps.

Earlier this year, I wrote to both the Department of Labor and the Office of Education in an effort to learn the reasoning behind this projected transfer and to obtain details of operations and costs of the program under its new administrative framework. The responses are enclosed.

The closest thing I received to an explanation of the transfer was the Office of Education's statement that "A combination of circumstances seems to have entered into the decision to consolidate programs of a somewhat similar nature."

In regard to how the program would operate next year, the Department of Labor indicated only that the matter was being discussed. Neither agency even touched on the question of future costs.

Thus, I have been unable to elicit any real justification of the transfer. However, I have received some very strong arguments in opposition to it.

I have had considerable correspondence with Mr. S. B. Glenn, Idaho State Director for Vocational Education on this matter. I have long had a high admiration for his abilities and judgment. Enclosed is a summary prepared by Mr. Glenn entitled "Pertinent Points Regarding the Vocational Work-Study Program in Idaho." I commend this summary to your attention, particularly the points relative to the present efficiency of administration and low cost. These points were further supported in a letter I received from Mrs. Irma Haley, President of the Idaho Vocational Association. In expressing her organization's opposition to the proposed jurisdictional change, she said:

"It is inconceivable to see how such a plan could result in any increase in efficiency of administration or operation or in monetary savings to the Nation, the States, or the local educational agencies. The opposite would appear to be the result of any such move and in addition it appears that it would result in frustration and confusion in having an agency other than Vocational Education working with school officials on matters concerning Vocational Education problems."

"I understand that the Vocational Work-Study program is being administered in Idaho at no, or very little, cost to the program. The program is well accepted

by schools and the number benefiting from the program is estimated to double in the next year. The machinery for operation of the program is all set-up and working smoothly. People concerned with education and cognizant of student needs are working hand-in-hand to promote and coordinate the program according to need."

Both the Department of Labor and the Office of Education took pains in their letters to me to show that every effort would be made to insure that students formerly served under the work-study program would be covered by the Neighborhood Youth Corps. Yet, in spite of all good intentions, it appears that this might be a practical impossibility.

As Mr. Glenn points out in his summary, the Neighborhood Youth Corps is not at present available in every community in Idaho. Surely this is also true of other states. Obviously then, it would take considerable immediate gearing up by NYC to encompass the changeover and it seems to me a matter of doubt whether no youths would be displaced from work-study.

Indeed, my apprehensions in this regard are only fortified by Secretary Wirtz's admission to me in March that the results of discussions of the future of work-study under NYC were not yet available. The absorption of the program into NYC was forecast in the FY 1967 budget. Now over a year later, I have been given no reason to believe that the Department of Labor is fully prepared to assume the responsibility. On the basis of the information made available to me, I am not optimistic that the transfer could proceed without severe dislocations and penalties to students who are now depending on the program.

The House Appropriations Committee in referring to the proposed shift of work-study to the Neighborhood Youth Corps stated: "The committee is convinced that the (NYC) is a less desirable way of providing for the needs of vocational education students and in addition would cost the Federal Government more money." This seems to me a very sound conclusion.

Vocational work-study under the Vocational Education Act of 1963 is a popular program. It is well-run. It is showing good results. The experience already achieved provides a basis not for dismantling the existing machinery but for expanding the program in its present form under its present authority.

Statistics collected from a survey of 48 states and territories by the American Vocational Association show that leaders in vocational educational throughout the country are ready and willing to enlarge the reach of the program substantially. The survey asked: "If funds were available, how many students do you estimate that you should serve in the work-study program?" The total of estimates was 347,824 for fiscal 1968 and increased to 391,180 in fiscal 1970.

Prior to the decision to make the transfer of the program (FY 1966), the Congress appropriated \$25 million for work-study. If that amount could be justified then, could it not also be justified now?

I respectfully request that your consideration of the action of the House of Representatives on this matter include an assessment of the merits not just of concurring in their recommendation but also of making available a larger sum than proposed by the House for the Vocational Work-Study program under the Vocational Education Act of 1963.

Thank you for your attention to these views.

Sincerely yours,

LEN B. JORDAN,
U.S. Senator.

U.S. DEPARTMENT OF LABOR,
OFFICE OF THE SECRETARY,
Washington, March 16, 1967.

Honorable LEN B. JORDAN,
U.S. Senate
Washington, D.C.

DEAR SENATOR JORDAN: Thank you for your letter concerning the Vocational Work-Study program.

Discussions are currently being held to determine the future course of the Vocational Work-Study program. While the results of these discussions are not yet available, you can be certain that every means possible will be explored to insure that no youth are displaced from the program.

When the future plans for the program are more clearly defined, I will be more than glad to advise you of them.

Sincerely,

W. WILLARD WIRTZ,
Secretary of Labor.

PERTINENT POINTS REGARDING THE VOCATIONAL WORK-STUDY PROGRAM IN IDAHO

1. Eighty-four (84) Vocational-Technical students in our State are currently being assisted with the work-study program. It is the opinion of schools involved that this number will double next year. None of these students would have been able to carry on their Vocational Education program without the work-study program assistance.

2. Local educational agencies in our State have identified needy Vocational Education students with the help of school counselors. It is evident that local educational personnel are in a much better position to perform this task than would an outside agency.

3. In practically all instances the actual work performed by Vocational students under the work-study program is related to and supplements their regular Vocational Education program. Here again, the local educational agencies are in an ideal position to see that this relationship is carried through.

4. The national cost of administering the Vocational Work-Study Program, as I understand, approximates 3%. The cost for this administration in our State has been nil inasmuch as such administration has been handled by our State staff and by the administration in the public school systems. It is doubtful that such administration under another agency could carry on the Vocational Work-Study Program without an excessive administrative cost.

5. The public schools in our State are "swamped" with maintaining relationships with the ever increasing number of State and Federal agencies. To bring another contracting agency into focus with our public schools and Vocational Education would only complicate matters further for the educational agencies in our State.

6. The Neighborhood Youth Corp program is not at present available in every community in our State. Incorporation of the Vocational Work-Study Program into the NYC or, as I understand, a new "Bureau of Work Programs, U.S. Department of Labor" would give this new bureau an opportunity to expand its operation within a state and result in further development of Federal bureaucracy and encroachment on the rights of local and State educational agencies.

7. It seems far more efficient for the counselors in our school system to advise with prospective Vocational students regarding the Vocational Work-Study Program than it would be for the school to arrange for an outside agency to disseminate this information.

8. A proposal to bring Vocational Work-Study Program under the Department of Labor is another step in bringing agencies outside of education into a functional situation within the education picture.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,

OFFICE OF EDUCATION,

Washington, D.C., March 28, 1967.

HON. LEN B. JORDAN,
U.S. Senate,
Washington, D.C.

DEAR SENATOR JORDAN: Thank you for your letter of March 2 concerning the phasing out of the work-study program provided for in Section 13 of the Vocational Education Act of 1963.

The Act of 1963 authorized an appropriation of \$30 million in 1965, \$50 million in 1966, and \$35 million for each of the next 2 years to carry out the provisions of Sections 13 and 14, the latter section concerned with residential vocational education schools. The Congress appropriated \$5 million for Fiscal Year 1965 for the work-study program, but made no funds available for the residential schools. Although States received their allotment late in Fiscal Year 1965, they were able to provide aid for 18,563 vocational education students, many of whom would have dropped out of school without the financial assistance made possible by the work-study program.

The Congress appropriated \$25 million for Fiscal Year 1966, and 72,941 needy students were assisted. For Fiscal Year 1967, the Department of Health, Education, and Welfare requested \$25 million; however, this was reduced. Ten million dollars were requested for the work-study program with the following statement included in the budget message:

"The decrease of \$15 million for the work-study program is attributed to the phasing out of the program as the Neighborhood Youth Corps program gradually assumes responsibility."

The \$10 million requested in 1967 was appropriated by the Congress. Despite the reduction in funds and the 25 percent matching requirement this year, it is estimated from preliminary State reports that 35,000 students will receive financial assistance to enable them to continue in vocational education programs conducted by the public schools.

In the President's budget message to Congress for Fiscal Year 1968, no funds were requested for the work-study program, and the following statement appears:

"Under the Vocational Education Act of 1963, a work-study program provides employment for students enrolled in vocational classes who are in need of financial assistance in order to continue their education. In 1968 this activity will be absorbed by the Neighborhood Youth Corps in-school program for which appropriations are included under the Economic Opportunity Program."

A combination of circumstances seems to have entered into the decision to consolidate programs of a somewhat similar nature. The phasing out of the program does not reflect on its quality, and we expect that students formerly served under our Work-Study Program will be covered by the Neighborhood Youth Corps.

If the Office of Legislation can be of further assistance, please let us know.

Sincerely yours,

ALBERT L. ALFORD,
Assistant Commissioner for Legislation.

ADMINISTRATION ON AGING

Senator HILL. I have received from Senator Harrison Williams, of New Jersey, and chairman of the Senate Special Committee on Aging, a statement in which he urges our subcommittee to favorably consider the request for funds for the Administration on Aging, for which nothing was allowed by the House inasmuch as the authorization had not been extended into fiscal year 1968 at the time the House acted on the bill.

(The statement follows:)

STATEMENT OF HON. HARRISON A. WILLIAMS, U.S. SENATOR FROM NEW JERSEY, CHAIRMAN SENATE SPECIAL COMMITTEE ON AGING

Mr. Chairman, and other distinguished Senators. I shall appreciate consideration by your Subcommittee of the possibility of including in H.R. 10196 an appropriation for implementing the Older Americans Act of 1965. I understand that the House was unable to include an appropriation for the grant programs of this Act, inasmuch as there was, at the time the House considered and passed the bill which is before you, no authorization for those programs for fiscal years subsequent to June 30, 1967. Now, however, the House and Senate have passed and the President has signed H.R. 10730, a bill which, among other provisions, authorizes \$10,550,000 for Title III of the Older Americans Act for fiscal year 1968 and \$6,400,000 for Titles IV and V for this fiscal year. Since this bill became law when the President signed it on July 1, there is now no longer any difficulty from the standpoint of Senate Rules in your including Older Americans Act appropriations in your bill.

In addition to the need for appropriations for the grant programs, there is a budget request of \$1,500,000 for "technical assistance, services, and administration" for this year, based upon the general authorization of the Older Americans Act of 1965.

It is my earnest hope that your subcommittee include appropriations in the full amounts authorized for the grant programs for the next fiscal year as well as the \$1,500,000 budget request for "technical assistance, services, and administration." To summarize, the items I support are:

Title III.....	\$10, 550, 000
Titles IV and V.....	6, 400, 000
Administration	1, 500, 000
Total	18, 450, 000

Programs administered under the Older Americans Act have accomplished much and are accomplishing much for the elderly of our Nation at relatively small cost. If the subcommittee wishes, the staff of the Special Committee on Aging can supplement this necessarily short presentation with a detailed description of the programs and projects which are being carried out with Older Americans Act funds. In the absence of such a request, I shall, for the sake of brevity, merely state my conviction that continued appropriations for implementing this Act will be a wise and sound investment toward solving the problems and meeting the opportunities of the later years of our compatriots.

FUNDS FOR PROGRAMS OF THE CHILDREN'S BUREAU

* Senator HILL. I shall place the letter from the professor of maternal and children health, Dr. William Schmidt, in the hearings for the guidance and information of the committee and the Senate.

(The letter follows:)

HARVARD UNIVERSITY SCHOOL OF PUBLIC HEALTH.

DEPARTMENT OF MATERNAL AND CHILD HEALTH.

Boston, Mass., June 13, 1967.

HON. LISTER HILL,
U.S. Senate,
Washington, D.C.

DEAR SENATOR HILL: As I stated in my telegram which I sent you yesterday, I very much hope that you and the Committee which you chair will find it possible to report a recommendation for appropriation of the authorized amounts for the several programs of the Children's Bureau.

I have considerable personal knowledge of the need for greatly improved maternity and infant care and comprehensive health care for children and youth. Moreover, I have had an active part personally in the development of projects in the Boston area and, through my teaching responsibilities and conferences with others, I am aware of the progressive development of projects in other parts of the country where they are greatly needed.

It is not easy, I can assure you, to work out the practical problems, and the relationships of health, hospital, nursing, and other interests concerned, in order to get such projects into effective operation. It is extremely important that the momentum that has been gained in establishing such projects should not now be lost for lack of sufficient funds to maintain them and, where necessary, to extend them.

The basic appropriations for Maternal and Child Health, Crippled Children's Services, and Child Welfare are, of course, also necessary. Whenever special projects are developed, it becomes important to maintain the efficient operation of the State agency responsible for the administration of the program, whether it be the State Department of Public Health, the Crippled Children's Agency, or the State Department of Public Welfare. It is all the more true, at present, for two reasons. First, about half of the Children and Youth Project Grants, as I understand it, have been made to Children's Hospitals, Medical Schools, or other agencies other than the State Departments of Public Health. This is good because it adds flexibility, speeds the development of programs, and mobilizes to a greater extent the capabilities of our Medical Schools and teaching hospitals in the public service. However, the more such projects develop, the more it is necessary for State Departments of Public Health and Crippled Children's Agencies to have the capability of maintaining effective liaison in establishing and maintaining standards and in assuring the availability of related services, including methods of evaluation of effectiveness. Second, in the area in which special projects have been established, problems of the welfare of children are as prominent as are health problems, and the two are closely inter-related. Therefore, in addition to all other measures of assistance and public welfare, child welfare services need to be maintained at effective strength and brought into ever closer coordination and joint action with child health services.

I wish also to draw your attention to the importance of restoring Public Law 480 funds for children's projects abroad, which I understand have been eliminated by action of the House of Representatives. Last Summer I had the opportunity of discussing some of the programs thus supported with Dr. Randall Thompson in New Delhi. He is the National Institutes of Health Science Repre-

sentative there. I met with members of international agencies, several Professors of Pediatrics, and later in Ceylon I spent several weeks in considering programs with members of the Department of Preventive Medicine of the University who are developing a demonstration area and studies in child health and development. I am convinced that the particular grants which the Children's Bureau administers under Public Law 480 are well used, highly appreciated, and will have beneficial results on the whole both for the recipient countries and for our own. I want particularly to say that throughout my travel I heard the most favorable comments on the way in which the Children's Bureau was administering these funds and the helpful and understanding contributions made by Dr. Katherine Bain, who is in charge of the program.

Finally, I wish to suggest that it would be most desirable to provide the Children's Bureau with the appropriation request for salaries and expenses. The Children's Bureau has always, to my knowledge, been a small Agency. I believe that the additional funds for salaries and expenses are intended to be used in part for increased staffing in the field of juvenile delinquency. This is greatly needed at this time. We are only now emerging from several days of very disturbing events in the Roxbury area of Boston, events in which young people were both demonstrators and victims. I know that the Children's Bureau was one of the first of the Federal agencies to move into the field of juvenile delinquency and that it has continued to contribute to a better understanding of this serious problem, and I hope that it will have the funds to continue to do so.

Yours sincerely,

WILLIAM M. SCHMIDT, M.D.,
Professor of Maternal and Child Health.

FUNDS FOR NATIONAL ASSOCIATION FOR MATERNAL CHILDREN

Senator HILL. I shall place the prepared statement of Mrs. Elizabeth M. Boggs, chairman of the governmental affairs committee the National Association for Retarded Children, in the hearing for the guidance and information of the committee and of the Senate.

(The statement follows:)

STATEMENT OF ELIZABETH M. BOGGS, CHAIRMAN, GOVERNMENTAL AFFAIRS COMMITTEE, THE NATIONAL ASSOCIATION FOR RETARDED CHILDREN

INTRODUCTION

The National Association for Retarded Children is a nationwide voluntary organization dedicated to the twin goals of preventing mental retardation and ameliorating its tragic effects. We speak for the "consumers of services" who, in the case of the mentally retarded, are usually unable to speak for themselves. Our concern encompasses the mentally retarded of all ages and all degrees of disability.

Members of NARC are found in every state of the union. Although we do not have the sophisticated machinery for massive data gathering available to federal and state governments, we are in touch with the needs of the retarded in a very direct way through our network of 1100 member units.

We recognize that this Subcommittee, and Congress as a whole, faces an immense challenge in attempting to allocate fairly the restricted amount of funds available for domestic programs in FY 1968 due to the gigantic expenditures on the Vietnam conflict. Nonetheless, in our opinion, a country with the resources of the United States can and must maintain a concern for its less fortunate citizens.

Over the past decade Congress has significantly increased the amount of funds dedicated to mental retardation activities. These expenditures seem almost inconsequential when measured against the heartbreaking effects of mental retardation in millions of American families and the billions of dollars lost annually as a result of this crippling disability. Nonetheless, federal funds have had an impact out of proportion to their actual size in stimulating the development of state and local services on behalf of the mentally retarded.

It would be indeed tragic if we jeopardized the recent progress which has been made on behalf of the mentally retarded to build upon the solid foundation which has been laid. Yet, our review of the President's Budget and the

House's action indicates that the amounts requested for a number of mental retardation programs are gravely inadequate.

Appendix A provides an overview of funds earmarked in the HEW budget for activities related to mental retardation. We would like to call to your attention some of the most glaring deficiencies in HR 10196 as it relates to mental retardation programs.

Title VI of the Elementary and Secondary Education Act.

Congress exhibited commendable initiative last year in adding Title VI to the Elementary and Secondary Education Act. This new Title authorized federal formula grants to support the initiation, expansion and improvement of special education programs for handicapped children.

The need for this federal assistance program is indisputable. Only about one-third of all handicapped children are now enrolled in the special education programs which they require and to which they are rightfully entitled. The House Committee on Education and Labor recognized this need in their recent report on the Elementary and Secondary Education Amendments of 1967 saying: "The committee is distressed that this critically important program to eliminate educational disadvantage has . . . not been carried out" (p. 9, H. Rept. No. 188, 90th Congress 1st Session).

While \$154.5 million is authorized under PL 89-750, the House-passed appropriation bill (HR 10196) for FY 1968 includes only \$15.0 million for Title VI programs—the same amount requested in the President's budget. A survey of state directors of special education, conducted by the Council for Exceptional Children, provides ample evidence that state and local educational agencies are prepared to put to wise use a much larger amount of federal funds.

If the enactment of Title VI is to have a significant impact on improving the quality and quantity of educational programs for handicapped children, the House appropriation for this program will have to be significantly increased. *We urge this Subcommittee to increase the amount available for Title VI programs to at least \$50 million.*

Construction of Facilities for the Mentally Retarded

The report of the President's Panel on Mental Retardation (October 1962) stresses the need to develop a full range of services for mentally retarded children and adults in or near communities where clients and their families reside and specifically calls attention to the need the construction of new facilities—particularly day and residential facilities. The Panel recommends that "high priority . . . be given . . . to construction of facilities for day and residential care . . ." pointing to the need for over 200,000 places in such facilities (p. 141 Panel Report).

The Department of Health, Education, and Welfare, in response to the panel's report sponsored legislation in 1963 to assist in the construction of a variety of facilities for the mentally retarded.

During the three years this program has been in operation, communities have provided tangible evidence of their willingness to respond to federal leadership. Indicative of this grass roots interest is the amount of non-federal matching funds which have been raised for the 106 projects approved under this program as of March, 1967. For these projects public and non-profit agencies at the state and local level have provided \$58.4 million, or over three times the required matching funds.

However, the initial effort launched in 1963 has barely scratched the surface. Many states have been spurred to take advantage of this program by the anticipation of increases in the token amounts allocated during the first few years of operation. Based on samples of need as indicated in four state mental retardation facilities construction plans, *NARC recently calculated that the cost of constructing community facilities to provide services for all of the mentally retarded presently denied services or attending programs conducted in inadequate quarters would be roughly 2.4 billion dollar.*

In view of this clear evidence of the overwhelming need for facilities and the adverse psychological effect of unrealized program aspirations, we are extremely disappointed that the Administration's budget request and House passed appropriations bill includes only half (\$15 million) of the \$30 million authorized in FY 1968 for this program.

We urge this Subcommittee to appropriate the full authorized amount (\$30 million) for Part C programs.

Staff and Direct Operating Funds for the Mental Retardation Division, Public Health Service

In the 1966 reorganization of the Public Health Service, the former Mental Retardation Branch was upgraded to Division status and several important mental retardation programs, previously administered by other PHS agencies, were transferred to this new Division. NARC was pleased to learn of this sensible consolidation of the mental retardation responsibilities of the Public Health Service. However, as a result of the reorganization, the Division has assumed additional responsibilities without a comparable increase in staff and direct operating funds.

The total personnel complement proposed for the Mental Retardation Division in 1968 is 72**—56 positions were carried over from the former Branch and 16 transferred with two construction programs previously administered by the Division of Hospital and Medical Facilities. This is the same number of staff members assigned to these functions during FY 1966. However, an additional nine million dollar grant-in-aid program was transferred on January 1, 1967 from NIMH to DMR without any increase in the Division's personnel complement or direct operating funds. This is the so-called Hospital Improvement (HIP) and In-Service Training Program (HIST), one of the most effective stimulus programs.

The regional office staff of the Division has proven to be most effective and should be strengthened to facilitate efficient administration of the increased responsibility which will accompany PHS decentralization and to permit improved consultation services to states and local communities.

We urge the Subcommittee to increase the personnel complement and direct operating funds for the Division to compensate for these additional responsibilities.

Training Teachers of Handicapped Children

In his 1967 message to Congress on Health and Education, President Johnson noted that "there are now only 70,000 specially trained teachers of the handicapped—a small fraction of the number the nation requires. In the next decade, five times that number must be trained and put to work" (H. Rept. No. 68, 90th Congress, 1st Session). Yet, the Administration has requested, and the House has appropriated, the same amount (\$24.5 million) for training teachers of handicapped children as was requested and appropriated by Congress in FY 1967. This amount is \$9.5 million less than the \$34 million authorized under Section 7 of PL 85-926, as amended.

Not only is the need great but the demand for grants under this program has far exceeded the available funds. According to information issued by HEW, during "fiscal year 1967, the requests for funds under this program exceeded the Congressional appropriation by \$31,000,000 or a ratio of more than 2 to 1" (*Mental Retardation Activities of the Department of Health, Education, and Welfare*, January 1967, p. 52).

In view of these facts, NARC recommends that the full authorized amount of \$34 million be appropriated for training of teachers of the handicapped.

The Hospital Improvement Program in State Mental Retardation Institutions

The Hospital Improvement Program has proven to be a highly effective means of stimulating the development of care and habilitation programs in state institutions for the retarded.

It was originally intended to be escalated at the rate of \$6 million annually until all state institutions had an opportunity to qualify. However, if the amount approved by the House for FY 1968 is not increased, appropriations for the HIP program will have remained almost static for three fiscal years.

This program can not be expanded to the 50 or so state mental retardation institutions which are not presently receiving grants unless FY 1968 appropriations are increased. Ironically, those institutions which need the HIP program most (i.e., the backward, custodial-oriented facilities) are not yet receiving federal funds.

NARC supports increased appropriations for this vital program of stimulus grants.

**The budget shows a total of 89 positions but 17 of these are assigned to the President's Committee on Mental Retardation, which has no operational relationship to the Division.

Construction of Vocational Rehabilitation Facilities

In 1965, NARC hailed the passage of PL 89-333 as a major vehicle for accelerating rehabilitation services to the more seriously retarded. One of the major improvements included in the 1965 Amendments was provision for federal assistance in the construction of sheltered workshops and other rehabilitation facilities. The need for new facilities to house expanding rehabilitation programs is clear.

Yet the House, in accordance with the Administration's request, has appropriated less than half the authorized (\$9 million) for facilities construction. We urge increased appropriations for this program.

Management of Non-Categorical Health Project Grants

Last year Congress enacted PL 89-749, to consolidate the nine categorical project grant programs (including mental retardation project grants) of the Public Health Service. With the abolition of the so-called categorical grant system, funds for such projects have been merged and the administrative authority centralized in the Surgeon General's Office.

In testimony before the House Appropriations Subcommittee, the Surgeon General provided tentative estimates on the amounts of project funds which will be devoted to various health problems; however, he indicated that these amounts are subject to change depending on the health priorities established by the states and local communities. In addition, the Surgeon General announced that the authority for reviewing and approving project grant applications will be decentralized to the nine HEW regional offices.

While NARC supports efforts to strengthen state and local health agencies by increasing the flexibility of federal support programs, we also feel that the Public Health Service has a nationwide responsibility for the health of the American people which transcends the collective responsibility of state and local officials. This nationwide role encompasses the stimulation of new and underdeveloped areas of health services.

We recommend that this Subcommittee carefully follow the results of the transition to non-categorical project grants during FY 1968 to assure that: (1) project funds are allocated among the competing health interests in an equitable manner; (2) project applications related to mental retardation and other health problems are evaluated by individuals who are knowledgeable in the particular field; (3) the establishment of priorities at the regional office level takes into account the relative merits of the various health activities; and (4) valuable programs initiated with categorical funds (e.g., the Student Work, Experience and Training Program of the Mental Retardation Division) are continued and expanded.

Mental Retardation Research

A. National Institute of Neurological Diseases and Blindness.—Most of the increases in the NINDB budget, as approved by the House, will be used to finance the continuation of research projects launched during previous fiscal years.

In order to meet fiscal restrictions, other Institute programs will have to remain static. In fact, unless the House figure is increased the total number of training grants offered by the Institute will have to be reduced from 591 in FY 1967 to 565 in FY 1968. In testimony before the House Subcommittee on Appropriations, Dr. James A. Shannon, Director of NIH, explained the dilemma that budgetary restrictions have placed on NINDB when he said: "We have the choice under the overall dollar ceiling to cut back on training or cut back on research. We feel we have a greater obligation to maintain the groups that are in being than to expand the training of new people . . . this judgment is taken on the basis of the hope and expectation that such type budgets will not last for an indefinite period of time." (p. 478, Part 5, House Hearings).

In view of the urgent need for increased knowledge regarding mental retardation and other neurologically-based disorders, *we urge this Subcommittee to increase appropriations for NINDB to an amount approaching the recommendation of the National Committee on Research in Neurological Disorders (\$146,000,000).*

B. National Institute of Child Health and Human Development.—The total budget of NICHD is increased only 5% by the House-passed appropriations bill. As Dr. Shannon indicated in testimony before the House Appropriations Subcommittee, "you don't get much with a budget increase of five per cent . . . it means there will be no funds of a supplemental nature to carry the increased cost of grants already in existence so that those supplemental needs that result from

increased costs of doing business will have to be supplied from other sources . . . from the community, from the institutions, from the hospital, or the medical school, or the scientists will do less work." (p. 636, Part 5, House Hearings).

We recommend further increases in the NICHD budget to compensate for cost-of-living increases and permit expansion in the institute's vital research and training efforts.

C. Training—General.—Tapering off support for the training of research scientists would be particularly inappropriate at this point in time. The bulge of so-called "war babies" are now moving into the labor market. Unless training funds are increased to compensate for the additional supply of available manpower to be trained, a great opportunity for advancing future research will be lost.

Thank you for providing us this opportunity to express our views on fiscal year 1968 appropriations for the Departments of Labor and Health, Education, and Welfare.

FUNDS FOR INTERNATIONAL RESEARCH AND TRAINING PROGRAM OF THE WELFARE ADMINISTRATION

Senator HILL. I shall place in the hearings the letter from Mr. Guy R. Justice, director of the American Public Welfare Association, urging the addition of funds for the special foreign currency program, for the guidance and information of the committee and of the Senate. (The letter follows:)

AMERICAN PUBLIC WELFARE ASSOCIATION,
Washington, D.C., June 15, 1967.

Hon. LISTER HILL,
Chairman, Subcommittee on Departments of Labor and HEW, Committee on Appropriations, U.S. Senate, Washington, D.C.

DEAR SENATOR HILL: I am writing in support of the request of the Department of Health, Education, and Welfare for the appropriation of funds from the currency program for the International Research and Training Program of the Welfare Administration. As you know, this item was deleted by the House of Representatives. We hope that it will be restored by the Senate.

Since this program is not highly visible in this country it does not enjoy the support of a strong domestic constituency. Thus it could probably be reduced or eliminated without touching off a great deal of protest. Even those who do have an interest in this program, including our own Association, naturally do not have the same familiarity with it as we do with those programs that operate here at home and affect us all more directly.

However, we have followed the development of this program with a genuine interest from the time of its inception and we are convinced that it is eminently worthwhile and beneficial and responsibly administered, and that it should be maintained.

We are convinced that research and experimentation conducted in other countries in subjects which are of vital concern to us, such as services for the aged, the prevention of juvenile delinquency, and the care of dependent children, can cast new light on our own problems. And since our own scientists and other professional people are involved in the development and evaluation of these projects, their experience and competence is thereby augmented to our ultimate benefit. Moreover, these projects make a humanitarian contribution to the countries where they are undertaken and serve also to establish and maintain channels of communication and good will between responsible professional leaders in the United States and foreign countries.

We regret the conclusion of the House Committee that these projects could as well be undertaken by the Vocational Rehabilitation Administration and the Public Health Service. We recognize the splendid contributions those programs are making and we urge their continuance. It is our understanding, however, that most of the projects related to the areas of responsibility of the Welfare Administration cannot be undertaken through any other au-

thority. Thus, if the requested funds are not forthcoming further activities of this type will of necessity be discontinued.

Another factor which speaks for the continuation of this program is that in 1968 the United Nations is sponsoring a conference of cabinet officers responsible for social welfare from approximately one hundred countries. The theme of the conference will be closely related to the research projects in social welfare subjects which are being conducted with the support of our foreign currency funds. This conference, which will be first of its kind ever held at this high level, promises to contribute significantly to a better understanding of social problems and of ways to improve our programs. In the light of these events we believe it is especially desirable to sustain this program at this time.

On behalf of the American Public Welfare Association I am pleased to commend to you the continuation of funds needed to maintain this program.

Sincerely,

GUY R. JUSTIS, *Director.*

OPPOSITION TO EXPANSION OF REGIONAL OFFICES OF THE OFFICE OF EDUCATION

Senator HILL. I have been handed a letter addressed to the senior Senator from the State of South Dakota, Mr. Mundt, in which opposition is expressed to the establishment and expansion of regional offices of the Office of Education.

(The letter follows:)

NATIONAL ASSOCIATION OF STATE BOARDS OF EDUCATION,
Parker, S. Dak., July 6, 1967.

HON. KARL MUNDT,
*U.S. Senate,
Washington, D.C.*

DEAR SENATOR KARL: When I was in Washington last January and again in March I informed you that our Association has adopted a statement on January 17, 1967 which read: "We oppose expansion of the regional offices of the U.S. Office of Education and recommend that wherever possible educational functions and authority be vested in state departments of education".

Subsequently, at area conferences held in Seattle, Wash. and in Denver, Colo., state board members adopted the following resolution:

"Whereas, the U.S. Office of Education in the Department of Health, Education and Welfare is expanding regional offices for the carrying on of activities in the field of education on the state and local levels; and

"Whereas, the expansion of such regional offices could be used as a means of by-passing state governments and, in particular, state boards and state departments of education to deal directly with local districts within the region; and

"Whereas, such development would provide another level of government and could further erode the historic interdependence of state, local and national efforts in the field of education.

"Now therefore, Be it resolved that the National Association of State Boards of Education hereby goes on record as opposing the expansion of regional offices of the U.S. Office of Education."

In addition we regard regional expansion as the imposition of another layer of government which could actually result in diluted program decision.

Therefore we urge that the Senate Appropriations Committee give careful attention to the U.S. Office of Education budget item (Salaries and Expenses, \$8,014,000 for Fiscal 1968) which will provide for increased staff in the U.S. Office of Education regional offices.

We trust that your committee will make substantial adjustments in these budget requests.

Sincerely,

EMIL A. KOEHN, *Treasurer.*

VOCATIONAL EDUCATION WORK STUDY PROGRAM

Senator HILL. I have received a letter from Senator Moss of Utah regarding the appropriations for the vocational education work study

program. I shall place his letter in the hearings for the guidance and information of the committee and the Senate.

(The letter follows:)

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
June 28, 1967.

HON. LISTER HILL,
Chairman, Labor, HEW Appropriation Subcommittee, Senate Appropriations Committee, Senate Office Building, Washington, D.C.

DEAR MR. CHAIRMAN: I am convinced of the need to provide an appropriation of \$25 million for the Vocational Education Work-Study Program for the fiscal year 1968.

It is my understanding that there is no budget request for this program, and that the House of Representatives, recognizing its great worth, recommended the transfer of \$10 million of Office of Economic Opportunity funds to it. This is commendable, but is not enough to do the job. The American Vocational Association determined by a survey that the states could have used \$24,828,314 of Federal funds in fiscal 1967, to assist 320,000 students. This same amount, at least, could be used in fiscal 1968.

I therefore recommend that the subcommittee provide a total of \$25 million for the Work-Study Program in the fiscal year 1968.

Sincerely,

FRANK E. MOSS,
U.S. Senator.

FUNDS FOR VOCATIONAL EDUCATION WORK-STUDY PROGRAM

SENATOR HILL. I have received a letter from Senator Joseph M. Montoya, of New Mexico, urging the addition of funds for the vocational education work-study program.

(The material referred to follows:)

U.S. SENATE,
COMMITTEE ON GOVERNMENT OPERATIONS,
June 23, 1967.

HON. LISTER HILL,
Chairman, Subcommittee on Departments of Labor and Health, Education, and Welfare and Related Agencies, Committee on Appropriations, New Senate Office Building.

DEAR MR. CHAIRMAN: I am deeply concerned over the proposal to eliminate the work study program as a part of the HEW vocational education effort. This was apparently done on the basis that the work-study program would be absorbed by the Neighborhood Youth Corps is a less desirable way of providing for the needs of vocational education students.

The work-study program, as it has been operating, has been one of the most successful and highly praised educational programs sponsored by the Federal Government. I know this to be true in New Mexico and suspect that it is probably true in most other states.

I believe that you will agree that when a student is given an opportunity to earn much needed money while completing his education, he is more likely to feel a sense of independence and a sense of responsibility to society and the community. Experience has shown beyond question that an opportunity to work and earn is far more productive than any "coddling" or "hand-out" approach could ever be. And I believe that the ideal and most efficient way to accomplish this is through existing educational facilities rather than through specially designed and separate activities.

As you know, the House transferred \$10 million from the OEO Neighborhood Youth Corps to HEW to continue the work-study program. I believe this to be a wise and proper decision, but based upon the highly successful experience in New Mexico, I feel that an additional \$15 million should be transferred to HEW for the work-study effort under vocational education.

Where a program has been as successful as the work-study program, it is inconceivable to me that we should do anything other than to strengthen and expand it. I therefore urge you and the Committee to provide a total of \$25 million to HEW for this purpose.

I sincerely hope that you will favorably consider my request.
 With warm personal regards, I am
 Sincerely yours,

JOSEPH M. MONTOYA,
U.S. Senator.

FUNDS FOR VOCATIONAL WORK-STUDY PROGRAM

Senator HILL. I have received a statement from Mr. Lowell A. Burkett, director of the American Vocational Association, urging increased funds for the vocational work-study program.

(The material referred to follows:)

STATEMENT OF LOWELL A. BURKETT, EXECUTIVE DIRECTOR, AMERICAN VOCATIONAL ASSOCIATION

The American Vocational Association is a private, non-profit professional association of 40,000 members who are concerned with the promotion and development of vocational, technical, and practical arts education. AVA members are engaged in teaching, administrative, or supervisory positions in comprehensive high schools, vocational high schools, area vocational schools, junior and community colleges, technical institutes, colleges and universities, state departments of education, and in manpower development and training activities. Still others are engaged in research, curriculum development, guidance and counseling or similar activities closely related to programs of vocational education.

Vocational educators are grateful to the Congress for its support of vocational education programs. Since enactment of the Smith-Hughes Act fifty years ago, Congress has continually evaluated our programs, and has enacted supplementary legislation to provide expansion and improvement. We are also appreciative of the fact that the Appropriations Committees of both the House and the Senate have many, many times given added support to vocational education in the face of recommendations by the Bureau of the Budget that vocational funds be cut. We are grateful for this, and we believe that our vocational programs will continue to justify the wisdom of your actions.

Our primary concern is that of providing high quality programs of education for employment. At the same time, we recognize the need for all youngsters to become proficient in the basic skills of communication, and to acquire knowledge and insight that helps them to become mature and responsible citizens. In addition to learning job skills, vocational students take part in other activities that enhance their employability. Many of you know of the programs conducted by vocational youth clubs—the Future Farmers of America, the Future Homemakers of America, the Distributive Education Clubs of America, the Vocational Industrial Clubs of America, and other similar clubs. Through club activities, youngsters have an opportunity to develop leadership abilities, to plan their careers, to provide service to their school and community.

SCOPE OF FEDERAL FUNDS

The policy-making body of our Association, the AVA House of Delegates, meets each December in conjunction with our annual convention. At that time, a program of work is adopted, including resolutions relating to Federal legislation for vocational education. I call to your attention the following resolution adopted by our House of Delegates in Denver, Colorado, December 9, 1966:

"Whereas, the economy of the Nation is contingent upon the productiveness of its people, and

"Whereas, many persons move from community to community in pursuit of employment opportunities, and

"Whereas, technology has developed to the point that education, training, and retraining are essential to employment, and

"Whereas, societal conditions in an advancing technological era are dependent in large measure upon the employability of the people, and

"Whereas, the tax base is inadequate in many states and local communities to support vocational education, and

"Whereas, the defense of the Nation is dependent upon an adequate supply of well-trained manpower,

"Therefore, be it resolved that the AVA urge the first session of the 90th Congress to appropriate for *fiscal year, 1968, the full amount of funds authorized by P.L. 88-210, and by other Acts which authorize funds for vocational education.*"

Following adoption of this resolution last December, the AVA staff surveyed the fifty states to assess the extent of financial support needed to move toward the goal of meeting vocational education needs "of all persons of all ages in all communities,"—the charge given to us by the Congress when it enacted P.L. 88-210.

Our survey was based on the assumption that the Federal-State-local matching ratios will continue at the same level now provided for in the Federal Acts.

Following is a summary of the information provided to us by the states:

SUMMARY OF A.V.A. STUDY NO. 1, 1967¹ (FEBRUARY 6, 1967)

Estimated Federal funds necessary to adequately meet demands for vocational-technical education:

Fiscal year:	
1967	\$414,988,890
1968	560,835,000
1969	656,316,499
1970	1,213,616,689

Estimated local and State support for vocational-technical education:

Fiscal year:	
1967	\$726,718,895
1968	875,188,871
1969	955,888,961
1970	1,045,666,676

Total financial estimates (Federal, State, and local) needed to provide adequate opportunities for vocational-technical education:

Fiscal year:	
1967	\$1,141,707,785
1968	1,436,023,871
1969	1,612,205,460
1970	2,259,283,365

Estimated enrollments in vocational-technical education programs:

Fiscal year:	
1967	\$7,097,600
1968	7,781,205
1969	8,829,562
1970	9,059,695

Estimated Federal support needed for constructing, equipping, and remodeling facilities to adequately meet the demand for vocational-technical education:

Fiscal year:	
1967	\$236,034,979
1968	323,669,883
1969	353,043,809
1970	354,231,724

Estimated average cost for constructing and equipping one residential school is \$3,996,051.

Estimated Federal support necessary to operate one residential school for a 1-year period:

Education cost per student	\$925
Residential cost per student	1,018

Estimate of the number of residential schools needs:²

Fiscal year:	
1967	57
1968	68
1969	84
1970	96

¹ The figures reflected in this study include estimates received from all States and territories except Montana, North Dakota, Wyoming, District of Columbia, and Virgin Islands.

² 7 States did not identify the number of residential schools needed.

Vocational-technical education teachers now employed in the States:

Full time	66, 719
Part time	57, 483

Total estimated teachers needed for vocational-technical education:

	Full time	Part time	Total
Fiscal year 1967	69, 252	64, 968	134, 220
Fiscal year 1968	81, 741	73, 730	155, 471
Fiscal year 1969	86, 591	79, 116	165, 707
Fiscal year 1970	93, 954	85, 934	179, 888

Investment in vocational teacher training in fiscal year 1966:

Local	\$2, 761, 176
State	7, 181, 290
Federal	5, 617, 396
Total	15, 559, 862

Total number of teacher trainers: 1,956 of which 1,018 are full time and 938 are part time.

Estimated Federal support necessary for preservice, inservice, internships, and fellowships for vocational teachers:

Fiscal year:

1967	\$20, 191, 991
1968	24, 090, 195
1969	27, 280, 495
1970	29, 442, 010

Estimated Federal support necessary to provide work-study programs for students who need assistance in fiscal year 1967—\$25,828,314.

Estimated number of students who should be served by work-study programs:

Fiscal year:

1967	323, 403
1968	353, 858
1969	379, 307
1970	396, 599

41 states reported that the differential in matching among various work-study programs has created problems.

Estimated Federal support needed by the states for vocational-technical education research:

Fiscal year:

1967	\$15, 029, 328
1968	19, 549, 370
1969	22, 429, 534
1970	25, 764, 629

We believe, Mr. Chairman, that these estimates reflect a need for the total \$225 million authorized by P.L. 88-210. As you know, not all of these funds go for grants to the states since P.L. 88-210 provides in Section 4(c) that 10 per cent of the total authorization be reserved for use by the Commissioner to make grants for research. We believe that research funds are needed and fully support the provision of the law that sets aside monies for this purpose. We believe, however, that the research should be tied more closely to program operation.

VOCATIONAL WORK-STUDY PROGRAM

I am sure this Subcommittee is aware of the recommendation of the Bureau of the Budget that the Work-Study Program (Section 13, P.L. 88-210) be phased out and replaced with a program established under the Economic Opportunity Act: the Neighborhood Youth Corps. You will recall that this recommendation was made last year by the Bureau of the Budget and has again been recommended with respect to the budget for fiscal year, 1968.

We believe that the vocational education work-study program effectively reaches vocational students who will not be served by other financial aid pro-

grams, and we are confident that these programs cannot be made available as efficiently and as effectively as has been demonstrated by the vocational work-study program.

The vocational work-study program is administered through existing state and local educational administrative channels. It operates in rural areas and small communities as well as in the larger urban areas. Existing administrative channels can operate the vocational work-study program for one student as well as for many. It aids students ages fifteen to twenty-one, trying to help them before they drop out at age sixteen when most drop-outs leave school. The vocational work-study program is administered by educators who are interested in vocational students and their future.

The vocational work-study program oftentimes has provided an opportunity to place students in jobs that are related to their vocational objective. Thus, the program becomes a valuable tool in motivating students and enhancing their employability.

In the first year of operation, fiscal year 1966, it was estimated that 50 percent of the students who participated in the vocational work-study program worked on jobs related to their vocational training.

The vocational work-study program has been well received by local school administrators as well as by State and local vocational leaders. They represent the administrative level closest to the students, and they have been free to make decisions at the level where the most information about students is available. Costs for program operation have been exceedingly low at both the State and local levels. Approximately 97 percent of each dollar appropriated has been spent to pay salaries of needy students.

It should be noted that the State and local communities make a contribution to the vocational work-study program which exceeds the contribution made by local agencies that sponsor the Neighborhood Youth Corps. I make this point simply to say that educators have promoted the vocational work-study program to the extent that local and state agencies are willing to pay 25 percent of the total cost of the work-study program. I know of no other Federally-supported work-study program, at any level, that has generated local support equal to that generated by the vocational work-study program.

To illustrate how successful the vocational work-study program has been, let me cite just one example which happens to come from the State of Ohio.

In the City of Cleveland during the summer of 1966, two hundred students were enrolled and employed at the Veterans Hospital. Many of the youngsters came from the depressed areas of the City of Cleveland. They did not miss any workdays and were anxious to continue employment as long as possible. Many of the work-study coordinators reported that these youngsters always arrived earlier than the regular employees. They also reported that the youngsters became changed persons in terms of their attitudes toward work and their interest and pride in being self-supporting and self-respecting young people.

The hospital officials were so favorably impressed with the work-study program and the employees involved in it that they conducted a special commendation ceremony at the hospital honoring these 200 youngsters involved in the program. This commendation which was publicly presented to the youngsters before all of the employees stated in part that, "Throughout the time you have been with us as a part-time student vocational education work-study employee, you have maintained exceptionally high standards of performance. You have displayed a willingness to learn and a natural desire to achieve excellence that rates special commendation. Work performed in your area of assignment has continuously been rated by your supervisor as highly satisfactory or outstanding—to recognize your efforts and assure you that your work has not passed unnoticed. I am commending you in writing by this letter."

It was generally felt by agency officials employing vocational work-study students that these youngsters were highly motivated and doing an excellent job not only earning and carrying their own weight as far as a job is concerned but learning new skills as well. *In several instances, these participating agencies have volunteered to provide the necessary matching percentage in water to participate in the program again this year.*

Parents of work-study students were interviewed concerning their reactions on the program. A typical comment is: "I cannot find words to express myself. The vocational education work-study program is doing a wonderful job for youth. I and my neighbors are very proud of this program and wish it will go further." Other parents indicated that the jobs enabled their youngsters to buy

their own clothes and shoes—thus making it possible for them to continue in school another term.

Students' reactions to the program were also elicited. Typical of these is a letter, quoted in part: "I think the work-study program is a very worthwhile and informative program. It has helped me and many other students to gain a great deal of priceless knowledge which can never be obtained in a classroom. Your teacher can tell you about a situation, what you're expected to do when it arises but you don't really grasp the whole idea until you are faced with it. While on this job, I have many times run up against a problem which I did not know how to handle. However, since this is a training program I have someone to turn to and ask for help whenever I need it. These things are happening to me. I don't have to read about what someone else does or be told what is hard or easy; I find out for myself—I feel now that I would like to broaden my vocational field and learn more than just things of the business world. To know whether or not you will be content at the type of work you are involved in you have to get some experience in handling the things you will do when you are on your own—I am very happy; I have had the chance to work here, and I feel privileged that I have had some fine teachers and have learned so much more than the students who learn only from books."

One of the things apparently that has made the vocational education work-study so outstandingly successful in terms of helping students earn and learn on the job is related to the fact that these youngsters are adequately supervised and directed as a part of the public school vocational education program. Employers often indicated that the vocational education work-study program was superior to other youth work programs primarily because of its close relationship and supervision by public school educators who were interested in and able to assist the employers with problems concerning the student.

NEED FOR INCREASED FUNDS FOR WORK-STUDY

On May 25, 1967, the House of Representatives approved an appropriation bill for the Departments of Labor, Health, Education, and Welfare which included the transfer of \$10 million from the funds requested for the Office of Economic Opportunity to be used by the Office of Education to support the vocational work-study program. We are pleased that the House took this action, but we hasten to point out that even this will not meet the demands for funds to assist in meeting the financial needs of vocational students.

We submit that vocational students are not less worthy of support than are students who attend colleges and universities. The college work-study program alone this fiscal year calls for \$139,900,000. We have only to read the messages of the President of the United States, or take a look at our own communities, to know that the number of students who will need vocational training far exceeds the number who will be going to college. Students should receive whatever financial assistance they need in order to pursue education and training; however, students should not be penalized because they choose to enroll in an occupational training vocational program as opposed to a college program.

DEVELOPMENT OF STATE LEADERSHIP FOR IMPROVING EDUCATIONAL OPPORTUNITIES FOR FARM MIGRANT CHILDREN

Senator HILL. I have a letter from Senator Holland, of Florida, with reference to the need for funds for fiscal year 1968 for work with farm migrant children. The Senator's letter will be placed in the hearings for the guidance and information of the committee and of the Senate.

(The letter follows:)

U.S. SENATE,
COMMITTEE ON APPROPRIATIONS,
Washington, D.C., June 15, 1967.

Hon. LISTER HILL,
*Chairman, Labor and Health, Education and Welfare and Related Agencies
Subcommittee, Committee on Appropriations, U.S. Senate, Washington, D.C.*

MY DEAR SENATOR: I have received the enclosed correspondence dated June 6, 1967, from Mr. Floyd T. Christian, Superintendent of the Department of Education of Florida, with reference to the abrupt "phase out" of the Elementary

and Secondary Education Act, Title V, Section 505 special project for "The Development of State Leadership for Improving Educational Opportunities for Farm Migrant Children."

It is my understanding that this was a three-year authorized project to terminate June 30, 1968. However, no funds have been requested by the Office of Education as it plans to phase out the project during the latter part of this year and funds unexpended for 1967 will be available for this purpose.

This decision was made, apparently because Title I of the Elementary and Secondary Education Amendment Act, H.R. 7819, as recently passed by the House, by broad interpretation, could possibly cover this type of project and prevent duplication.

In view of the fact that this project has served a worthwhile purpose and since the authorization does not go beyond June 30, 1968, I am of the opinion that funds should be appropriated to allow the Office of Education to continue the project at the current rate of expenditures which I understand is estimated at \$25,000 per month for each of the six states involved, namely Arizona, Oregon, Washington, Delaware, and Florida.

With kinds regards, I remain

Yours faithfully,

SPESSARD L. HOLLAND.

RURAL HEALTH SERVICES

Senator HILL. I have a letter from Senator Len B. Jordan, of Idaho, urging the subcommittee to favor the Department's request for the restoration of funds disallowed by the House for rural health services.

(The letter follows:)

U.S. SENATE,
Washington, D.C., June 9, 1967.

HON. LISTER HILL,

Chairman, Department of Labor, Health, Education and Welfare and Related Agencies Subcommittee, Senate Appropriations Committee, New Senate Office Building, Washington, D.C.

DEAR MR. CHAIRMAN: This letter is to urge you to give every consideration to approval of funding the Rural Health portion of the Public Health Service budget for Community Health Services in the amount requested by the President in his fiscal 1968 budget estimate.

The House Appropriations Committee chose to allow only \$186,000 for this item, \$814,000 less than requested. I believe that the program the Public Health Service contemplates implementing with the full \$1,000,000 appropriation merits the restoration of these funds.

According to Public Health Service, the rural population—some 30 percent of Americans—has only about one-half the access per person to doctors, nurses, dentists, hospital beds and other health resources as compared with the rest of the Nation.

From what I know of the situation in my own state of Idaho—a predominantly rural area—this crisis in health services is rapidly becoming worse. In Idaho there are only .8 physicians per 1,000 persons statewide. But even this figure makes the ratio look better than it is, because the majority of physicians live in the more heavily populated centers in the state.

Owyhee County has no physician. Valley County which a year ago had six doctors now has only three. The city of Mountain Home with a population of over 13,000 has only one doctor. The towns of Parma, Marsing, Homedale and Filer have no physicians.

Idaho doctors average three years older than the national average. At present, the attraction of rural or small town practice to medical school graduates is practically nil. Even young Idahoans trained in medicine with the help of state funds are not returning to the state to practice.

There is a damaging out-migration from the state of all professional health personnel. In the last four years, more than half of the nursing graduates in Idaho have left the state. The number of high school graduates going into nursing has declined since 1950. Administrators in the areas of mental health and mental retardation advise me that they have immense difficulty attracting com-

petent staff and as much difficulty holding onto the staff members they now have.

Idaho's sparse population, rugged topography and great distances make the establishment of adequate health services a staggering challenge. A small number of dedicated and concerned people are literally giving their lives to meet this challenge. But their efforts alone cannot succeed. More energy, more understanding, more expertise and certainly more resources are needed just to arrest the deterioration of rural health care.

I know that you, as an expert, are well aware of the problems in rural health. However, I felt compelled to present some picture of the situation in my state because it seems to me that the situation there is approaching a condition of widespread inadequacy of health services which I do not believe can be countenanced in a nation with the wealth and the conscience of America.

In their Rural Health program the Public Health Service contemplates allocating skilled manpower to help develop competence in rural communities to plan and implement effective rural health service programs. They also hope to contract pilot tests to explore imaginative uses of technology for rural health such as communications systems linking isolated rural medical practitioners or demonstration of the role of health aides in increasing the effective utilization of available service. Such activities hold promise for the creation of an environment which will attract physicians and health personnel.

The \$1,000,000 request for fiscal 1968 would represent, I think, quite a modest commitment to this effort. I think it is most important that this commitment be made.

Thank you for your consideration of this matter.

Sincerely yours,

LEN B. JORDAN, *U.S. Senator.*

U.S. SENATE,
COMMITTEE ON PUBLIC WORKS,
June 8, 1967.

Hon. LISTER HILL,
*Chairman, Subcommittee on Labor, HEW Appropriations,
Senate Committee on Appropriations,
New Senate Office Building.*

DEAR MR. CHAIRMAN: Your subcommittee has heard testimony from the president of the National Cystic Fibrosis Research Foundation, Dr. Milton Graub, about the need for more research in the cystic fibrosis field.

I am impressed that this research money would be of direct benefit to children, and from Dr. Graub's testimony it is evident that there is room for optimism that with more research the treatment for this disease can be markedly improved.

In light of the great number of children afflicted with this disease, Mr. Chairman, and the prospects for more effective means of therapy following more intensive research, I want to express the hope that it will be possible for your subcommittee to act favorably on Dr. Graub's request for \$250,000 in training funds and \$750,000 for five pediatric pulmonary centers.

With best wishes, I am

Sincerely,

J. CALER BOGGS.

EDUCATIONAL OPPORTUNITY GRANTS

Senator HILL. I have a letter from the director and financial aide of the State University of New York at Albany setting forth the university's desire for the restoration of funds the House denied for educational opportunity grants.

(The letter follows:)

STATE UNIVERSITY OF NEW YORK AT ALBANY,
Albany, N.Y., June 14, 1967.

Senator LESTER HILL,
*Chairman, Senate Subcommittee on HEW, Labor Appropriations,
Congress of the United States,
Washington, D.C.*

DEAR SENATOR HILL: The State University of New York at Albany has just been informed that the House Appropriations Subcommittee on H.E.W. has cut

the 155 million dollar request to fund the Educational Opportunity Grant Program for 1968 to 140 million dollars.

Needless to say, this has caused the utmost dismay among Institutions of Higher Learning in the Eastern United States.

It is most urgent that the requested appropriation of 155 million dollars be approved to meet the needs of disadvantaged students in our institutions. If the appropriation is reduced to 140 million dollars, this will force institutions to reduce by 27% the number of initial year grants to their students.

The serious cut in funding for Educational Opportunity Grants for this 1966-67 academic year forced many young people to borrow too heavily for their education and to carry heavier workloads than should be required of them to pay their college expenses.

In order to prevent this serious situation from occurring again in the academic year of 1968-69, we urgently request that you use all means available to you to pass the 155 million dollar appropriation required to support the Educational Opportunity Grant Program in 1968.

I am certain that you are acutely aware of the financial needs of many of the young people seeking to gain higher education. Please give us the support necessary to continue the Educational Opportunity Grant Program at the level necessary to meet the needs of our young people.

Thank you for aiding us in serving the disadvantaged youth of our nation.

Most sincerely,

DONALD A. WHITLOCK,
Director Financial Aids.

EDUCATIONAL OPPORTUNITY GRANTS

Senator HILL. I shall place in the hearings the letter received from from Mr. Kenneth Wooten, director of the Department of Placement and Financial Aids of the University of Mississippi.

(The letter follows:)

THE UNIVERSITY OF MISSISSIPPI,
DIVISION OF STUDENT PERSONNEL,
University, Miss., June 9, 1967.

HON. LISTER HILL,
U.S. Senate,
Washington, D.C.

DEAR SENATOR HILL: It has recently come to the attention of college student financial aid officers that the House Appropriations Sub-Committee on Health, Education and Welfare has reduced substantially the maintenance level request for the Educational Opportunity Grants Program. Colleges throughout the country have sought out disadvantaged students and brought them to the campus with needed aid which includes the Educational Opportunity Grant. Colleges have been encouraged by congressional action to make long term commitments to these students who, but for these programs, would be unable to finance their college education. As President of the Mississippi Association of Student Financial Aid Administrators and Vice-President of the Southern Association of Student Financial Aid Officers, I should like to urge the Senate Sub-Committee on Appropriations for Health, Education, Welfare and Labor to restore the full 155 million request for the Educational Opportunity Grants Program.

Thank you for any consideration that may be given this matter.

Cordially,

KENNETH L. WOOTEN, *Director.*

EDUCATIONAL OPPORTUNITY GRANTS

Senator HILL. I have a letter from Mr. Robert B. Kimmel, president of the Southern Association of Student Financial Aid Administrators in which he urges the restoration of funds for the educational opportunity grants to \$155 million, the amount of the budget estimate.

(The letter referred to follows:)

SOUTHERN ASSOCIATION OF STUDENT FINANCIAL AID ADMINISTRATORS,

June 7, 1967.

Hon. LISTER HILL,
U.S. Senate,
Washington, D.C.

MY DEAR SENATOR HILL: It is my understanding that the House Appropriations Subcommittee on Health, Education, and Welfare has recommended a cut in the Educational Opportunity Grant request for the 1968-69 year from \$155,000,000 to \$140,000,000. Since aid officers have a moral commitment to continue Educational Opportunity Grant renewals, the \$15,000,000 cut would, of necessity, come from initial awards. In other words, we would experience a reduction in initial awards from \$55,000,000 to \$40,000,000, or a 27% reduction. This reduction can be ill-afforded at a time when we are exerting a maximum effort to get more qualified students into college. Not only would we jeopardize their incentive to apply for admission at any school of their choice, but a reduction would force a greater indebtedness on those students who are in the *least* desirable position to bear the extra burden.

Although I cannot speak for the Southern Association of Student Financial Aid Administrators (SASF AA), it is my personal feeling that if a reduction is imminent, it should come from a revocation of legislation regarding the \$200 incentive awards. At such an early date in the administration of the Educational Opportunity Grants Program, it is impossible to determine the worth of the incentive awards, but I would at least question their success in motivating students to perform above and beyond the academic level of their ability.

Since you represent the South in this matter, I would be pleased to offer the services of the Southern Association of Student Financial Aid Administrators, and I feel equally certain that the various state aid organizations would likewise work with us in providing any additional details which you may feel necessary.

Sincerely,

ROBERT B. KIMMEL,
President, SASF AA.

SUBCOMMITTEE PROCEDURE

Now we have three more witnesses, and we are going to have to take a recess. It is nearly 1 o'clock. You all have been very patient, waiting here. Mrs. Desmond? I am going to have to ask if you could come back in about an hour's time?

Mrs. DESMOND. Well, I guess so; yes, sir.

Senator HILL. How about you, Mr. Brandes?

Mr. BRANDES. Sir, I must catch a plane out at about 1:30, sir.

Senator HILL. Well, that means you have got to go to the airport now.

Mr. BRANDES. Yes, sir; I sure have.

Senator HILL. If I had known that, I would have sought to have called you earlier.

Do you have your statement you could leave with us?

Mr. BRANDES. I have already left the statement, Senator. I would like to, if I might, make just a brief comment, not more than 3 minutes, if it were possible.

Senator HILL. All right, sir.

STATEMENT OF RODDY A. BRANDES, PRESIDENT, AMBULANCE ASSOCIATION OF AMERICA

SUPPORT OF PROGRAMS OF BUREAU OF HEALTH SERVICES

Mr. BRANDES. Sir, I am the president of the Ambulance Association of America, and it comprises around 225 members presently. However, these 225 members are responsible for the transportation

of better than 60 percent of the population of the Nation, and over the past several years, sir, we have spent thousands of dollars trying to upgrade the ambulance services across the Nation, in seminars and through direct training. But we have expended just about all of our funds, and now we are seriously asking the Emergency Medical Services Branch to help us in this effort. I mean, we know the ill, now we are looking for the cure, and the cure is with knowledgeable people, enough people to give us support in this ill that all of us are familiar with, and we certainly solicit the chairman's search into this, and the approval of the funds to upgrade the funds. I think some of them have been cut out, and we would certainly hope that consideration be given to that, sir.

Senator HILL. Well, we appreciate your presence, and I assure you we shall give careful consideration to your statement, sir.

(The prepared statement follows:)

I am Roddy A. Brandes of Charlotte, North Carolina, President of the Ambulance Association of America, and operator of ambulance services in Charlotte, Greensboro and High Point, North Carolina, Columbia, South Carolina, and Knoxville, Tennessee. The Association which I represent has a membership of 227, comprised of the owners and operators of commercial ambulance firms in 47 States.

I am here as a voluntary witness to respectfully ask the Congress to support improvement of emergency medical services to the millions of victims of accidental injuries or sudden illness who are taken by ambulance every year to the hospital. Therefore, it is my earnest desire to support the appropriations request made by the Emergency Health Services Branch, Division of Direct Health Services, of the U.S. Public Health Service.

Since my interest is in ambulance services, I will confine my discussion to this phase of emergency care. It should be recognized that this is one of the most sensitive public services in the country. Millions of Americans sooner or later will be transported in an ambulance. Their lives often depend on the care they receive in that short time.

Despite the fact that better than 60% of the population of this Nation are exposed to the professional ambulance services of the members of the Ambulance Association of America, the chances of obtaining good care on the way to medical facilities are very poor. Many ambulance crews in this Country are untrained or inadequately trained; many of the ambulances are unequipped or poorly equipped.

President Johnson has called attention to the national problem of death and destruction on our highways. The question that bothers me every day is this: How many of the 50,000 fatalities from automobile accidents every year—and more than 50,000 deaths from other accidents—could have been prevented by having an adequately trained ambulance crew? An injured soldier in Vietnam on the average has a better chance of surviving—or having his injuries properly tended—than a person hurt in an automobile accident in this country.

The story is repeated daily where a person expires because an untrained ambulance attendant *did not know how* to treat an accident victim for shock or to stop profuse bleeding. This situation is becoming more prevalent with the increase of our population and utilization of automobiles.

A major problem is that the general public *is not aware* of the need for adequate ambulance services. That, undoubtedly, is why most local governments have failed to establish uniform standards of service. The *shocking fact* is that in most communities you can buy a dilapidated station wagon and use it as an ambulance *without equipping it with as much as a band-aid or having attendants who know elementary first aid*. This situation is compounded by the fact that many local government officials do not assume responsibility for the provision of adequate service. Be mindful, however, that in these same communities, barbers, beauticians and embalmers—but not ambulance attendants concerned with people's lives—must meet certain standards of competence to obtain a license to operate.

Perhaps the most basic element of emergency medical services is trained personnel. We would not tolerate a hospital emergency room with no trained per-

sonnel, yet it has been recognized by knowledgeable persons that the care given an accident victim in the first minute after his accident is perhaps the most important. At a minimum, an ambulance crew's training should be comparable to the advanced first aid course of the American National Red Cross.

My home city of Charlotte is one of the few communities in the country that *insists by ordinance*, on a high standard of training. Charlotte requires that no person shall be employed as an ambulance driver or attendant unless he has completed the Red Cross advanced first aid course. *He also must complete 25 trips as an observer before being allowed to operate an ambulance or touch a patient.* He must complete a course on administering oxygen, one on handling persons whose larynx has been removed, one on handling expectant mothers, and one on handling heart patients. *Every American city should have similar standards.*

Good equipment is another serious deficiency in many ambulances. Often these vehicles lack such essential first aid items as splints or even bandages. The vehicle might be a \$26,000 limousine or again, it might be a 20-year old battered panel truck. Often ambulances lack room for the attendants to move about in or sufficient space to render required immediate care to patients. Please bear in mind, these vehicles are supposed to be life saving instruments, but in most communities in this country, the local funeral parlor provides transportation to the hospital in a hearse with a red light and a siren which carries no first aid equipment.

Granted and with grateful acknowledgment, the funeral directors have transported our injured and infirm for many years. They have done so primarily as a public service—usually operated at a financial loss—because they have the only vehicle capable of transporting patients. The situation is far from ideal.

Ambulances often have inadequate radio and telephone communications, especially in smaller communities and remote rural areas. Without a good communications system, valuable minutes are lost in bringing prompt medical assistance to the patient in need.

Good communications between the ambulance and the hospital emergency room is essential to inform hospital personnel of the patient's condition in advance so that proper preparations can be made before arrival of the emergency facility.

I have purposely omitted many other weaknesses in ambulance services in this country. To say more would sound like a shotgun indictment of our emergency services spectrum. We must, however, acknowledge the fact that thousands of our fellow citizens are every day given shoddy ambulance service and that some of them die needlessly—or suffer increased disability—because of inadequate or improper care.

We, the concerned members of this industry, respectfully recommend that this Committee support the appropriations under discussion to better enable the Public Health Service to gather information, establish guidelines, and assist local governments in developing adequate emergency health services across the nation.

We in the Ambulance Association welcome standards to upgrade emergency health services, and have, in fact, developed our own Code of Ethics to that end. We are aware of responsibilities delegated to the U.S. Public Health Service, and in particular to the Emergency Health Services Branch, to provide support to the Highway Safety Agency in its activities concerning accidents on the highway.

We believe that the full participation and active support of the Emergency Health Services Branch is essential to the success of this program. Without such participation, the goals of the Emergency Health Services Branch are unattainable. The Ambulance Association believes that existing deficiencies in our nation's emergency health services are sufficiently critical to warrant the total mobilization of all available resources—public and private—to correct them. Here is an area where coordinated federal, State and community action can combine to produce public benefits of inestimable value. We strongly urge that the existing intimate and long-established relationships of the Public Health Service be utilized to provide the leadership so essential to success in meeting the critical challenge which confronts us.

We of the Ambulance Association pledge our complete cooperation in meeting this challenge.

SUBCOMMITTEE PROCEDURE

Senator HILL. Thank you.

Mr. BRANDES. Thank you, sir.

ASSISTANCE FOR SCHOOL CONSTRUCTION

Senator HILL. I have been handed the joint statement of Senators Anderson and Montoya, of New Mexico, regarding Federal funds under Public Law 815 for New Mexico schools. The statement will be placed in the hearings for the guidance and information of the committee and of the Senate.

(The statement follows:)

STATEMENT OF SENATORS CLINTON P. ANDERSON AND JOSEPH M. MONTOYA
REGARDING FEDERAL FUNDS UNDER PUBLIC LAW 815 FOR NEW MEXICO
SCHOOLS

Mr. Chairman, we are deeply concerned over the Administration's failure to request sufficient funds to assist with school construction in all Federally impacted areas. We have been informed that the Office of Education, HEW, has requested \$22.9 million to fill eligible requests which are estimated to exceed \$71 million. This obviously means that almost 70% of the nation's school districts that are eligible for and urgently need Federal assistance will not receive it as was intended under P.L. 815, unless the Congress provides the necessary funds and liberalizes the current criteria.

In the State of New Mexico alone, we have nine school districts with pending applications for Federal assistance. If these requests are not approved—and we don't see how all of them can be with only 30% of the necessary money available—the children of our State are the ones who will suffer. This situation apparently exists in other States.

The following is a specific example of the situation that now exists. In the Jemez Springs Municipal Schools located at Canyon, New Mexico, the problem of providing adequate educational facilities for our school children has become critical even though the school district has continued to bond itself to its legal and practical capacity. In spite of the building efforts, the high school pupils still attend classes in buildings which have been declared fire traps and are overcrowded and substandard.

Four very old frame barracks are being used for classrooms and regular classrooms have been partitioned. The elementary principal has a table in the corridor for an office and the kitchen, which now serves about five hundred fifty (550) persons a day, was designed to accommodate three hundred (300). The elementary library is used as a classroom. The kindergarten is housed in the lobby of the gymnasium.

The total enrollment has increased from four hundred fifty nine (459) in 1963-64 to six hundred thirty-three (633) as of February 13, 1967. Of the total enrollment, about 50% (314) are Indian pupils living on Indian reservations which can not be taxed for school purposes, and therefore, the school district is eligible for Federal assistance under P.L. 815.

Even in view of these facts, under existing Section 14 requirements Jemez Springs would be eligible for only about 10% of the funds necessary to construct adequate facilities. And with the school district already bonded to capacity, there is no practical way to locally obtain the other 90% necessary for school construction.

We cite this example to point up two serious weaknesses in the current program: (1) The Administration continues to request only a small portion of the funds necessary to carry out the full intent of P.L. 815, and (2) the criteria under Section 14 of P.L. 815 for determining the eligible amount of Federal assistance is apparently not flexible enough to allow for determinations to be made considering the whole school district situation.

At the time when this Congress is considering ways and means of improving the education program for educationally disadvantaged children, for children in the inner areas of our great cities, and in other areas of the world, we cannot neglect the children of our Federally impacted areas. This is particularly true of the American Indians living on reservations, who are among the most disadvantaged Americans in this country.

We urge the Chairman and the members of the Subcommittee to recommend appropriation of the full amount needed for all applications currently on file with the U.S. Office of Education, and to favorably consider the more flexible requirements for determining eligibility which have been proposed by HEW. I believe this is the very least that we can do for the children of this great nation.

FUNDS FOR LIBRARY OF CONGRESS UNDER TITLE II OF THE HIGHER
EDUCATION ACT

Senator HILL. I shall place in the hearings a letter to me from Mr. Gordon B. Turner, vice president of the American Council of Learned Societies urging the committee to approve the full amount authorized, \$7.7 million, for the Library of Congress for foreign acquisition and shared cataloging program and for the Monthly Index of Russian Accessions.

(The letter referred to follows:)

AMERICAN COUNCIL OF LEARNED SOCIETIES,
New York, N.Y., April 20, 1967.

HON. LISTER HILL,

Chairman, Subcommittee on Labor, Health, Education, and Welfare Appropriations, Committee on Appropriations, U.S. Senate, Washington, D.C.

DEAR SENATOR HILL: The American Council of Learned Societies has been informed that under Title II C, Part A, of the Higher Education Act of 1965 only \$4 million of the \$7.7 million authorized has been requested. Through this section two very important activities of the Library of Congress are financed: (1) the foreign acquisition and shared cataloging program, and (2) the *Monthly Index of Russian Accessions*. Both are essential and neither can be carried out with less than the authorized funding. We urge you, therefore, to restore this item to its authorized level of \$7.7 million.

The foreign acquisition and shared cataloging program which Congress has enabled the Library to establish is a great step forward in library work. Indeed, nothing has been so encouraging to the entire educational and research community as this bold and imaginative step taken by Congress two years ago. Under it the Library of Congress is to acquire, as far as possible, all library materials of value to scholarship that are currently published throughout the world and promptly catalog them centrally for all of the great research libraries that desire such assistance. This will not only be of immense aid to the academic community in its endeavor to provide education to American citizens concerning the world abroad, but it will permit enormous economies to American research libraries by enabling them substantially to reduce duplication of work and speed up their cataloging.

Financial assistance provided to the Library of Congress in this current fiscal year includes \$3 million for this acquisition and cataloging program as well as \$478,000 for the *Monthly Index of Russian Accessions*. If only \$4 million is provided in fiscal '68, either the latter activity will have to be abandoned, which is unthinkable, or the acquisition and cataloging program will be seriously damaged, for the Library of Congress has this year made arrangements with a number of foreign national libraries which it will not be able to honor if it does not receive the funds authorized and anticipated. It would surely be a false economy if the momentum achieved in this country and abroad were lost for lack of this relatively small sum of money, and if thereby the great research libraries in this country were not after all to receive the benefits which this program operating in high gear could provide them.

I have said that a failure to fund the *Monthly Index of Russian Accessions* would be unthinkable. This is correct. MIRA is unique and indispensable, and if abandoned after twenty years of existence, it could not be re-established for its excellent staff of specialists would be drawn off immediately into other tasks.

MIRA is the only source in existence which provides a subject approach to Russian publications, and as such it provides our Soviet experts with a vital guide into the great mass of Russian publications that flows ceaselessly into this country. The U.S. Government and the academic community have long recognized the necessity of studying and analyzing the Soviet Union. For this purpose millions of dollars in public and private funds are spent annually in acquiring Soviet literature. It would be no economy to destroy the one indispensable tool which makes this material usable. Repeated testimony over the years from an impressive array of government officials, Soviet specialists in public and private life, and responsible officers of learned societies, library associations, and universities reveals the importance that this large and influential segment of society attaches to the *Monthly Index of Russian Accessions*.

The American Council of Learned Societies, as a national federation of thirty-three professional associations in the humanities and social sciences, and as an organization concerned for twenty years in the development of Russian and Soviet studies, wishes to bring these facts to your attention. We trust you will agree that a restoration of appropriations to \$7.7 million will be a sound investment in the nation's educational resources and will substantially increase its ability to analyze and understand the international scene. For these reasons we wish to urge appropriation of the full amount authorized in support of these important operations.

Sincerely yours,

GORDON B. TURNER, *Vice President.*

FUNDS FOR MEDICAL LIBRARY FACILITIES CONSTRUCTION

Senator HILL. I have received a letter from Mr. Ralph T. Esterquest, librarian of the Francis A. Countway Library of Medicine, Boston, urging restoration of funds for the construction of medical libraries.

(The material referred to follows:)

THE FRANCIS A. COUNTWAY LIBRARY OF MEDICINE,
Miami, Fla., June 11, 1967.

Senator LISTER HILL,
Chairman, Labor and Health, Education, and Welfare, Subcommittee of the Senate Appropriations Committee, Senate Office Building, Washington, D.C.

DEAR SENATOR HILL: As you know, the House Appropriations Committee, last month, reduced by \$2.5 million the amount requested for 1968 for Medical Library Facilities Construction.

If the Senate were to concur in this reduction, there would be the most unfortunate consequences for progress in medical education and research. You are one Senator who knows how we have all labored together over the years to build a total plan for improving the nation's health, first by federal support for medical research, and then for other and related efforts. Your own efforts have been of paramount importance. For a long time, medical libraries were left out, even though the increase in research was placing fantastic burdens upon them.

The enactment of the Medical Library Assistance Act in 1965 was the great hope. The Act is a superb package; it provides for several important ingredients, each of which goes to make up an improved capability for medical libraries to support medicine. Each part of the total package is essential to the whole. It would be a tragic mistake to reduce the Facilities Construction portion, just when medical libraries are about to move forward dramatically in this enthusiastic effort to do their job better.

I have just arrived here in Miami to attend the annual conference of the Medical Library Association, and I find everywhere a sense of discouragement. The medical librarians attending this meeting have no special axe to grind; they get no extra money, just good healthy satisfaction out of doing a better job.

Many medical schools and hospitals have applied for federal matching funds for new or remodeled facilities. Many of these applications have been acted upon favorably by the implementing agency, namely, the National Library of Medicine, which, I can testify, has applied rigorous criteria in judging them. The institutions that are applying have pledged from their own inadequate resources funds which could easily be used for other purposes. Thus, there is good evidence that the schools and hospitals need the new facilities and that they have not inflated their proposals.

These proposals call for \$20 to \$20 million in federal matching money right now.

I hope that the Senate Appropriations Committee, and then the Senate itself, will restore the full \$5 million that was requested in the budget. Better yet, appropriate the \$10 million that is authorized in the Assistance Act.

I have an official position in writing you, since I am presently serving as chairman of the Federal Relations Committee of the Medical Library Association. Naturally, I am voicing the official views of the Association. But I am also writing as a citizen who, by virtue of being close to the medical library situation, sees how important this matter is in terms of the welfare of the nation's health.

Please let me know if I can be helpful at forthcoming hearings or in any other way.

Sincerely yours,

RALPH T. ESTERQUEST, *Librarian.*

(Dictated by Mr. Esterquest, signed in his absence.)

FUNDS FOR LIBRARY SERVICES AND CONSTRUCTION

Senator HILL. I have received a letter from Senator John Sherman Cooper, of Kentucky, with which he has enclosed a statement from Miss Margaret Willis, the State librarian, urging restoration of funds for library services and construction.

(The material referred to follows:)

U.S. SENATE,
COMMITTEE ON PUBLIC WORKS,
June 29, 1967.

Hon. LISTER HILL,

Chairman, Subcommittee on Labor-HEW, Committee on Appropriations, U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: I enclose a copy of a statement prepared by the Department of Libraries of Kentucky concerning the fiscal 1968 budget for the Library Services and Construction Act, and urge that the Committee restore to at least last year's level funds for Title II of this Act.

Miss Margaret Willis, the State Librarian, is gravely concerned that the House has approved the budget cut for library construction from \$40 million last year to \$27,185,000 in the coming fiscal year. This will result in a \$200,000 cut in the Kentucky program, with no further extension of regional library development and almost no library construction or remodeling.

I would appreciate very much your including Miss Willis' statement in the hearing record.

With kind regards, I am,

Sincerely yours,

JOHN SHERMAN COOPER.

[Enclosure]

STATEMENT TO THE LABOR-HEW AND RELATED AGENCIES APPROPRIATIONS SUBCOMMITTEE OF THE SENATE

The proposed cut in the Library Services and Construction Act will do irreparable harm to Kentucky's Public Library Program in the following way:

1. No further extension of Regional Library Development to 38 counties not now participating in 1967-68.
2. The construction or remodeling of almost no Library buildings in 1967-68, since two projects approved in 1966-67 could not be implemented at that time.
3. Drastic reduction in the purchase of new Bookmobiles to replace worn-out ones and to provide service for the first time in counties now qualifying for such service.
4. Stoppage of all plans to cooperate with Educational Television in the planning of educational programs in Public Libraries.
5. No further Demonstrations of better Library service for counties unable to qualify with local appropriation, although 8 counties want and need such Demonstrations.
- No. 6 No further local action for local support will be taken by counties, since there will be no incentive for them to qualify for aid, when aid is not available.
7. No expansion of services from the State Library will be possible, although they are seriously needed.

Although Titles III and IV of L.S.C.A. offer good programs, they are beginning before Titles I and II have accomplished even the rudiments of a basic program in one third of the state.

Accomplishments under Title I (services) and Title II (construction) have been fantastic, in comparison to the funds allotted to this title:

A centralized processing center serves all counties participating in Demonstrations and Regional Library development.

Regional Library development has resulted in the careful selection, cataloging, processing and delivery of over 1 million books to 82 counties comprising 18 Library Regions in Kentucky.

Twenty-three professional Librarians and 50 Clerk Typists, Library Technicians and Library Aides have organized new Libraries, have been developing Library Systems or Demonstrations and have provided programs of outreach to hundreds of thousands of new users—out in the counties.

5 counties have voted to establish County Library Service. 47 counties have passed a local Library Tax. 11 counties are now working to pass a local Library Tax; and have almost reached the necessary goal.

Twenty-eight Library Construction or Remodeling Projects have been approved, most of which are either completed or in the process of construction.

Hundreds of Head Start, Outreach, Home Start, Job Corps, and general educational programs have been bolstered or initiated—without additional funds.

Workshops have been held regularly.

Ten scholarships have been provided for professional Librarians.

Ninety-six new, larger Bookmobiles have been purchased to replace older ones or to provide service in previously unserved counties.

Outstanding needs which still exist:

Ten counties still have no Library or Bookmobile service of any kind.

Eight additional counties still have no Bookmobile service for isolated, country people.

Impacted, urban counties which still have received no aid for Regional development are:

	<i>Population</i>
McCracken -----	57,306
Warren -----	45,491
Kenton -----	120,700
Campbell -----	86,803
Boyd -----	52,163
Fayette -----	131,906
Jefferson -----	610,947
Total -----	1,105,316

Thirty-one rural counties have still received no aid for regional development:

<i>Population</i>	<i>Population</i>
Ballard ----- 8,291	Livingston ----- 7,029
Boone ----- 21,940	Madison ----- 33,482
Boyle ----- 21,257	Mason ----- 18,454
Bracken ----- 7,422	McCracken ----- 57,306
Carlisle ----- 5,608	McCreary ----- 12,463
Carter ----- 20,817	Menifee ----- 4,276
Casey ----- 14,327	Mercer ----- 14,596
Clark ----- 21,075	Montgomery ----- 13,461
Elliott ----- 6,330	Nelson ----- 22,168
Estill ----- 12,466	Oldham ----- 13,388
Gallatin ----- 3,867	Owsley ----- 5,369
Grant ----- 9,489	Pendleton ----- 9,968
Grayson ----- 15,834	Powell ----- 6,674
Greenup ----- 29,238	Todd ----- 11,364
Hopkins ----- 38,458	
Jackson ----- 10,677	Total ----- 484,514
Lee ----- 7,420	

Twenty-eight of the above counties have either no Library program or a program which is almost non-existent. To help in any appreciable extent will require two year-Demonstrations, which are expensive.

All Library programs (even the best) are seriously understaffed (many are one or two person operations) and are therefore handicapped in giving quality Library service to citizens.

Eight small Bookmobiles, purchased in 1954, and holding a maximum of only 900 books, are still trying to operate, in spite of numerous breakdowns and expensive repair bills.

Fifteen larger Bookmobiles, purchased in 1960, are now beginning to break down and have increasingly expensive repair bills.

Much larger and more effective Bookmobiles, holding 3500 books, costing \$17,000 each, and requiring a staff of two persons, are needed in the following areas to serve the disadvantaged in impacted areas as well as to serve county citizens:

Paducah and McCracken Counties.
 Louisville and Jefferson Counties.
 Covington and Kenton Counties.
 Newport and Campbell Counties.
 Pikeville and Pike Counties.
 Hopkinsville and Christian Counties.
 Bowling Green and Warren Counties.
 Richmond and Madison Counties.
 Ashland and Boyd Counties.
 Elizabethtown and Hardin Counties.

(At least 3 complements of books or approximately 10,000, costing \$40,000 are needed for each Demonstration.)

A pilot program of outreach of the Library in Whitley County has shown the need for similar programs in all poorer counties. It is called Home Start, with Library personnel and volunteers visiting isolated homes, reading to the children, helping parents with their problems, and bringing children to the Library for Story Hours, Film Programs, Puppet Shows, and simple Educational Programs.

Thirty-four counties are ready and applying for Library and Construction Projects.

Forty other counties need new Library facilities.

The State Library at Frankfort is suffering from a shortage of staff and materials to meet increasing demands from the counties.

In the face of increasing needs and demands, the budget of the Department of Libraries was extremely "tight" in 1966-67. With increasing responsibilities and opportunities in 1967-68, the situation will be impossible with the same small federal appropriation (\$596,000) in 1967-68 for Title I (services) and a serious cut from \$677,000 to \$463,000 for Title II (construction).

Many will have to be denied the opportunity of going forward.

Cuts will have to be made in many areas.

The program as authorized is modest indeed.

It is therefore urged for reasons of emergency and justice that the Senate appropriate the amount authorized for Titles I and II for 1967-68.

LIBRARIES AND COMMUNITY SERVICES

Senator HILL. I have received a letter from Senator Anderson, of New Mexico, enclosing copies of letters received from him from constituents concerning library services funds.

(The material referred to follows:)

U.S. SENATE,
 COMMITTEE ON AERONAUTICAL AND SPACE SCIENCES,
 May 26, 1967.

HON. LISTER HILL,
 Chairman, Appropriations Subcommittee on Health, Education, and Welfare,
 U.S. Senate.

DEAR MR. CHAIRMAN: For your information and consideration I am enclosing copies of letters from Mr. Joe W. McKnight of Lovington, New Mexico and Mr. Lowell Potter of Tucumcari, New Mexico concerning library services funds.

Sincerely yours,

CLINTON P. ANDERSON.

[Enclosures]

NEW MEXICO STATE LIBRARY,
 Lovington, N. Mex., May 18, 1967.

HON. CLINTON ANDERSON,
 U.S. Senate, Washington, D.C.

DEAR SENATOR ANDERSON: Your support of the passage of the Library Services Construction Act (PL 89-511) is appreciated as we have told you. The appropriated \$76,000,000 has been well-spent particularly here in New Mexico where there is much to show for our share of it in the form of services, construction, interlibrary cooperation and special services to institutions and the physically handicapped. Even so a budget cut has been recommended.

Should the recommended appropriation for the Fiscal Year 1968 be passed—\$68,000,000—rather than the authorized \$114,000,000 appropriation which is badly needed the country over, New Mexico would suffer considerably. This budget cut will mean generally that many librarians may not be able to conduct effective holding actions under Titles I—Services, II—Construction, III—Inter-library Cooperation and IV—Service To Institutions and the Physically Handicapped.

It is our hope that you will be able to give your conscientious support to this valuable work by seeking the full authorized appropriations—amounting to \$114,000,000—that the Library Services Construction Act (PL 89-511) programs underway here in New Mexico will grow and that the progress made so far will not be lost to us. We will continue to do our best to use wisely the legislative help you can give us. The work under all Titles, here, should be a source of pride to you.

Very truly yours,

JOE W. MCKNIGHT,
*Advisory Board President,
Southeastern Regional Library,
Lincoln County Commissioner.*

TUCUMARI, N. MEX., May 11, 1967.

HON. CLINTON P. ANDERSON,
*U.S. Senate, New Senate Office Building,
Washington, D.C.*

MY DEAR SENATOR: As a member of the Tucumcari Library Board, I urge your support of the Library Services and Construction Act. In this day of the "knowledge explosion", the Public Library is being used more and more by both youth and adults to keep abreast of the times.

Any decrease in the funding program will mean less emphasis on a service that has not yet come of age. It is particularly important that we have additional funds in the Titles I and II in order that we do not lose ground in the continuing struggle to produce a well informed populace.

Again, we urge your strong support for Library Services and Construction Act.

Sincerely,

LOWELL POTTER,
Director, Tucumcari Library Board.

FUNDS FOR HIGHER EDUCATION ACT

Senator HILL. I have received from Senator Montoya, of New Mexico, a letter together with enclosures concerning the program in the State of New Mexico. I shall place this material in the hearings for the guidance and information of the committee and of the Senate.

(The material referred to follows:)

U. S. SENATE,
COMMITTEE ON GOVERNMENT OPERATIONS,
May 26, 1967.

HON. LISTER HILL,
*Chairman, Committee on Labor and Public Welfare,
U.S. Senate.*

DEAR MR. CHAIRMAN: I am enclosing for your information a copy of a report that I recently received from New Mexico State University on its program under the Higher Education Act of 1965.

I thought that you would be pleased to know that positive accomplishments are being made at New Mexico State under the legislation sponsored by your Committee. I take this opportunity to express the appreciation of the people of New Mexico for your fine leadership on aid to education legislation.

With warm personal regards, I am,

Sincerely yours,

JOSEPH M. MONTOYA, *U.S. Senator.*

[Enclosure]

NEW MEXICO STATE UNIVERSITY,
University Park, N. Mex., May 20, 1967.

HON. JOSEPH M. MONTOYA,
U.S. Senator,
Senate Office Building,
Washington, D.C.

DEAR JOE: Attached is a list of figures which shows the progress of students who are partially supported by Educational Opportunity Grants.

As. Dr. Philip S. Ambrose, Vice President-Student Affairs, has pointed out, these students have the motivation to move out of the tax-consuming to the tax-producing bracket, but need financial help in order to attend college.

We thought you would like to have a report of the positive accomplishments of the Higher Education Act of 1965.

All you have done in support of this program is greatly appreciated.

Sincerely,

R. B. CORBETT, *President.*

NEW MEXICO STATE UNIVERSITY EDUCATIONAL OPPORTUNITY GRANT RECIPIENTS,
1966-67

Number, 126.
Number of withdrawals before end of Fall semester, 5.
Number of withdrawals end of Fall semester, 2.
Number of entering freshmen Spring semester, 6.
Number of Educational Opportunity Grants having scholarships as part of matching aid, 20.
Total value of Educational Opportunity Grant awards, \$59,925.00.
Total amount of National Defense Student Loan matching funds, \$52,590.00.
Matching amount from scholarships, \$4,310.00.
Grade-point average Fall semester of Educational Opportunity Grant recipients, 2.150.
Grade-point average Fall semester of all freshmen, 1.600.
Average number of hours enrolled in, 15½.
Grade-point average range, 0.357 to 3.705.
Range of hours 12 to 19.
Sex of recipients:
Male, 65.
Female, 61.
College enrolled in—

	Percent
Arts and sciences.....	26 (20.6)
Agriculture	16 (12.7)
Business administration and economics.....	12 (9.5)
Engineering	29 (23.0)
Teacher education.....	43 (34.1)
Total.....	126

Senator HILL. Now, Dr. Mick?

Dr. MICK. I am here. I will be here, sir.

Senator HILL. Oh, you are over there. We are going to have to recess pretty soon now, because we have got another matter I have got to attend to.

Dr. MICK. I have already canceled my flights, and my girl has changed all my appointments, so I can come back.

Senator HILL. Could you come back, then, in about an hour? You can come back, Mrs. Desmond?

Mrs. DESMOND. Or else maybe I had better just file mine.

Senator HILL. Well, if you see fit to do that, it is up to you.

Mrs. DESMOND. And could I just say one word to you?

Senator HILL. All right.

STATEMENT OF MRS. RUTH DESMOND, FEDERATION OF HOME-MAKERS, ARLINGTON, VA.

ANNEX TO FOOD AND DRUG LABORATORY

Mrs. DESMOND. May I present this book? You know I always have to leave the book every year, and this book is especially good. It is by the English doctors, and it is on the effects of sugar and, you know, white flour, and possibly contributing to heart disease.

Senator HILL. Surely, thank you. Thank you very much.

Mrs. DESMOND. And then my one comment is we are very eager, our own federation, to seek what we call the annex to the Food and Drug laboratories, right out in Beltsville, and not take that \$5 million and spend it out in Wisconsin. We think we can take that \$5 million and do some research for us poor people who are having all this, you know, risks from all kinds of products that aren't properly warned, and this is all I want to do, and then I can run on, these inserts.

LETTERS ON DDT

This is our own letters on DDT because we are mentioning our attendance at international conference on biological effects of pesticides in our own resolution on additives.

PREPARED STATEMENT

And this is a very posh one, Mr. Chairman, then I will fly on. This is one we brought up 2 years ago, and this shows that these fatty acids and the pesticides go all through our body, and I would like to have that in.

Thank you very much, Senator.

Senator HILL. All right.

Mrs. DESMOND. I will see you next year.

Senator HILL. We will have this appear in full in the record, and we thank you very much. Very, very much.

(The prepared statement follows:)

RE APPROPRIATIONS FOR THE FOOD AND DRUG ADMINISTRATION FOR FISCAL YEAR 1968

Mr. Chairman and members of the subcommittee, this morning I am accompanied by my daughter, Mrs. Janet Cobb, from Huntsville, Alabama. On behalf of the Federation's Board of Management, I am presenting this book "Diabetes, Coronary Thrombosis, and the Saccharine Disease" by English physicians and investigators T. L. Cleave, Surgeon Captain, Royal Navy, and G. D. Campbell, Physician to the Diabetic Clinic of the King Edward VIII Hospital, Durban, Natal, South Africa. Their research seriously implicates the habit of eating white sugar and bleached flour with many of the ills of humans. Perhaps you are aware that two British scientists (Dr. John Yudkin and Jill Morland) blame high sugar intake for heart attacks. Here in the U.S. the philosophy of "eating our cake and having it too" produces a different approach to heart and circulatory ills and most of our degenerative diseases. The symptoms are dealt with rather than the various culprits revealed.

The officers of this nationwide group of public-spirited homemakers always appreciate this opportunity to appear before your subcommittee to appeal for an

adequate appropriation for FDA—whose enormous responsibilities increase annually. Since last we appeared the Administrative officers of FDA have been obliged to leave over-crowded Federal Building No. 8 and move to the Crystal Plaza in adjacent facilities to its Bureau of Medicine.

Apparently there is Congressional agreement between the Senate and the House that there is a need to provide an addition to the outgrown FDA Laboratory-Office Building. The logical site for such a laboratory extension appears to be in Beltsville, Md.—where FDA already has its modern dog kennels and other facilities for certain of its animal research studies. However there has been Congressional disagreement as to where to build this FDA supplemental laboratory—so desperately needed to enable FDA to carry out its responsibilities for protecting the public from many risks—mainly the outcome of our modern way of living. The Congressional Record of May 25th, 1967 revealed the dilemma. Apparently the members of the House Appropriations Committee have supported the building of this FDA laboratory extension in this area—preferably at Beltsville. It has been the Senate's objection to this FDA first choice for its supplemental laboratory that has held up the plans, etc. Now the House has given in and agrees that said needed laboratory must be built at least fifty miles from the D. C. area! It appears the second choice is Madison, Wisconsin. According to estimates this move will originally cost the taxpayers of this Country another \$5,000,000. Of course the costs of trips back and forth for conferences and long distance calls, etc. will continually add to the initial expense of locating this addition in Madison, Wisconsin.

Here in Beltsville, FDA could confer with USDA scientists—it is close to the main FDA laboratory and to its Administrators. It is convenient too for conferences with USPHS scientists and those at NIH. It is also convenient to the new Environmental Research Center being constructed in North Carolina. In the name of efficiency—why should this addition be placed in Madison, Wisconsin? In the name of economy—the \$5,000,000 saved initially could well be applied to research to benefit the exposed public. We do hope the members of the Senate Appropriation Committee will consider the taxpayers' interest in deciding on a site for this extension of the FDA laboratory.

The \$5,000,000 saved by building the proposed FDA laboratory extension in this area could be used by FDA for intensive research on the effects of household product fumes on householders—especially the allergic, the sensitive—those with asthma and hayfever problems. So little warning seems to be reaching the public about room-pollution—although most of the public now realizes the potential dangers of air pollution and water pollution! In bad weather the housewife stays home and cleans—usually with very poor ventilation of the premises. In one day she may polish the furniture, remove floor wax with a strong remover and re-wax—she may even do a bit of touch-up painting—or she may antique a piece of furniture. She may also hang up room de-odorizers—especially in the bathroom. Then she may repair damage to her nails by use of polish remover and nail polish. She may even spray her hair. Perhaps she may have time to remove spots from clothing with a strong cleaner. She might even relax then with an alcoholic beverage. Suppose she reacts to these fumes—allergically or perhaps with a heart attack. Will the real culprits be exposed—so she can protect herself in the future? Who knows the effects of these exposures on individuals? What about these exposures on the pregnant—and the unborn baby? This saving of \$5,000,000 could start research to give us the answers. Presently there are no plans at NIH for this type of research. There may be research to determine the effects on industrial workers but not on the purchasers of these products! Too expensive was the reason given our officers by NIH. Yet several days later the papers came out with the suggestion that perhaps NIH may spend a billion dollars to make cigarettes safe! Since there are reports from the Surgeon General about the harm from cigarette smoking and the public must be well informed by now—it would seem that the smokers should pay for any research to make cigarettes safe. It is in this area of home pollution that people are receiving no warnings when perhaps many need to be protected and informed to use the products with the strong fumes only on days when the home can be well-ventilated. We had one fact impressed on us at NIH—that it is dangerous to drink alcohol and breathe carbon tetrachloride. If it is dangerous for individuals with heart conditions and circulatory ailments to breathe strong paint fumes and other strong odors from household products—we feel this information should be publicized. Just this spring I lost my beloved dog to strong paint fumes. I had taken her to the veterinary to consult as to her medication. Unfortunately we were sent into a treatment room filled with paint fumes from exterior paint being applied—and the exhaust fan

was not switched on. My dog collapsed and died a few hours later despite intensive care with injections to stimulate her heart. The veterinarian at once proclaimed that the paint fumes were killing her and removed her to another room—free of said fumes.

It is not possible to warn purchasers of the hazards of using certain products without ruining the economy? Ammonia has dramatic warnings—yet it is purchased and used with judgment. It seems to our officers that there is a deliberate effort to protect industry at the expense of the public's well being. Surely we could have profits, intelligent warnings, judgment in use and better health!

This is our respectful suggestion—that the FDA laboratory addition be built in nearby Maryland on property of the Federal government and that the savings be used for specific research into home pollution from household products with strong fumes.

We also would like to see the FDA work with the USPHS to test the safety of a new home product which has *no odor* but may have a serious potential for harming the allergic, the asthmatic, infants, pregnant, the ill. This season the public is being tempted by an advertising campaign to purchase a strip or strips of an organic phosphate pesticide which is so devised that it releases its volatile vapors continuously for three months—provided it is used in badly ventilated rooms—no breezes. A trade magazine—*Chemical Week*, May 20, 1967, refers to this particular pesticide impregnated strip as a "Chemical Fly Swatter" and I quote: "DDVP has 'modest' toxicity to humans." "Its use has been restricted by some local health boards." Strangely this product—without warning odor—has a Good Housekeeping Magazine Seal of approval. Here is a full page advertisement from our Sunday Magazine Section of the Washington Post, June 25th, 1967. Prime T-V commercial time has been bought to urge the public to use this "remote control" fly exterminator instead of a safe fly swatter. So a huge volume of sale must be anticipated. This Federation appealed to both the FTC and the USDA last fall when commercials for this chemical fly swatter was viewed in the South. Apparently to no avail. Until recently—because of a special report it had received from a scientific committee—the USPHS did not approve the use of this chlorinated organic phosphate insecticide for home use. It took the compassionate position previously that the use of pesticides should never be substituted for other conditions which will eliminate insects in the home. Previously the USPHS had felt every effort should be made to minimize the exposure of humans to pesticides. Previously they expressed concern to exposures of infants to said toxic fumes from these pesticide strips and the ill too.

Under hazardous household products we feel FDA should now be advanced funds to test these strips and to see—at the least—there are warnings so that the trusting public will not be convinced it is absolutely safe for them to sit daily in rooms for three months or more with these strips emitting their toxic fumes. The Clinical Toxicology of Commercial Products (Gleason et al., 1957) gives DDVP (Vapona) a toxicity rating of 5. *Roses Chemical Dictionary* (1958) page 391—states "It is toxic to DDT resistant stains of flies."

Incidentally, in this Gleason (1957) "Clinical Toxicology of Commercial Products" in Section IV *Supportive Treatment*—page 213 on liver damage due to toxic chemicals—it is suggested that: "A large variety of dietary supplements has been employed in the control of liver disease. A high caloric diet demands a correspondingly generous intake of vitamin C and B complex." If it is discovered by FDA in any research on effect of toxic fumes on humans—that said fumes destroy or interfere with vitamins in the human body—this information should be made public—so that harmed individuals could employ the corrective therapy—physicians certainly should be so informed.

Mr. Chairman, you may recall that several years ago—when we appeared before you—we left sample jars of baby food. We pointed out then that a World Health Organization Technical Report, Series No. 228 stated, at page 6:

"While the use of food additives is not a point of primary consideration in this report, there is one class of foods to which special reference must be made. Foods that are specifically prepared for babies require separate consideration from all other foods as regards the use of food additives and toxicological risks. The reason for this is that the detoxicating mechanisms that are effective in the more mature individual may be ineffective in the baby. The Committee strongly urges that baby foods should be prepared without food additives, if possible. If the use of a food additive is necessary in a baby food, great caution should be exercised both in the choice of additive and in the level of use."

This warning was sounded in 1962. Again in December 1966 in Rome, Italy, fifteen nutritionists with WHO-FAO urged that no additives be used in process-

ing and preparing baby foods unless absolutely essential. We are looking forward to a copy of this latest Report shortly. Why, in view of these specific warnings, is U.S. baby food still permitted to be overly sweetened and salted and made appealing to the adult taste? Even a suspect thickener (sodium carboxymethyl cellulose) is used in some strained infant meat. Are these flavor enhancers causing our citizens to develop degenerative conditions younger in life? Why should this threat to infant well-being be permitted? How can Congress and FDA justify this continued ignoring of the WHO-FAO warnings? Surely infant health should have preference over the health of the economy.

Perhaps you may wish to include in this statement the Federation's latest Resolution, passed by its Board, so that members of the Association of State Food & Drug Officials of the U.S. could discuss it at the 71st Annual Conference held in St. Paul, Minn. June 18-22. To protect the ill, sensitive and allergic, this group feels it is vital to list all food ingredients and additives used in a processed food on its label.

This May 4 and 5 I had the privilege of attending part of an International Conference on the Biological Effects of Pesticides on Mammalian Systems sponsored by the N. Y. Academy of Sciences. When the papers given are published—this Federation will purchase a set. Results of animal tests re effects of pesticides were given. Then the researchers were hasty to point out this did not *prove* humans would experience the same ill effects. English scientists did sound grave warnings about possible genetic damage to the human race. It seems remarkable to our officers that when animal research exposes serious damage to vital organs there should be some attempt to protect humans from similar harm—while the research goes on to give the scientific answers respecting effects on humans. It was admitted at this conference that after over twenty years of extensive use of DDT there is no scientific knowledge of its lifetime effects on humans. It was further admitted that its interaction with other pesticides and with drugs is not known. Then came another admission that there is no scientific knowledge if it causes genetic damage! There was general agreement this knowledge will come only through Federal research—that industry will not carry it out. So I appeal to this Appropriation Committee to grant the funds so that this research which should have been done at least a decade ago can now be carried out. We have so polluted our environment with DDT that now FDA is obliged to set tolerances for DDT, DDD and DDE in milk and dairy products. The Agency had a special Committee advise it on said tolerances. Our Federation is calling for a public hearing on this matter of DDT and related chemicals in milk, etc. as we feel there should be a time-limit and every effort made to clean up the environment. Taking a different view are milk producers in certain states where the soil retains DDT for many years—due to climatic conditions. These businessmen protest that the tolerances FDA suggests are unrealistic. So you can see it is time to get the answers about the lifetime effects of this persistent pesticide—DDT—which has invaded the earth. The Federation's letter to FDA's Hearing Clerk is produced here for the record.

Several years ago this Federation mentioned research by three USPHS scientists indicating that under severe emotional stress the Free Fatty Acids are released from the body's fat depots and circulate freely in the blood stream. This report is herewith offered for inclusion in this Statement. This Report seems especially relevant in view of the paper given by Department of Interior scientists from Patuxent Wildlife Research Center. Dr. Dustman spoke of birds fed DDT who appeared normal—in good health—until the emotions of mating and building nests—when many suddenly died. Autopsies revealed that the DDT had left their body fat and was circulating in their blood. We feel the enclosed Report indicates that humans release the persistent pesticides with the Free Fatty Acids under emotional stresses—certainly when dieting or when ill with high temperatures.

At this N. Y. Conference FDA scientists presented their report on the thalidomide-like deformities produced by certain widely used fungicides on chicks hatched from eggs in which said fungicides had been injected. Great emphasis was placed on the fact that this had happened to chicks and much more research was needed before it could be related to humans! At the opening ceremonies for Fed. Bldg. No. 8, Federation officers had watched the interesting experiments on this matter of harming chick embryos—not only with fungicides but with combinations of insecticides.

Federation officers appeared before Chairman Flood in late March before attending this International Conference sponsored by the N. Y. Academy of Sciences—so this is our first opportunity to plead for research funds to carry out

research to get the scientific answers to effects of DDT and also to learn more about the damage pesticides and other economic poisons may cause the unborn of exposed pregnant women.

In reading public testimony given before Chairman Flood a most interesting comment caught our eyes—that after cancer the public fears blindness most. Unfortunately blindness is on the increase—especially that caused by glaucoma. What seems to be rarely publicized is that bella donna and atropine (its derivation) can contribute to glaucoma. Yet unfortunately atropine is one of the antidotes for accidental exposure to pesticides. So many of our over-the-counter medicines contain bella donna or atropine as relaxants. Should not there be warning of this harm via the labels? My Mother, aged eighty-six, and being treated for glaucoma, unknowingly purchased a laxative which contained bella donna. I noted it as one of the ingredients and removed this medicine. Fortunately for my Mother, my interest in reading scientific materials and books on public health problems first warned us to beware of bella donna. A public health officer in his book (whose name now escapes me) warned that both bella donna and atropine could aggravate the condition of glaucoma. At that time my mother was being treated for an ulcer by an internal medicine specialist who was prescribing bella donna. Simultaneously she was being treated for glaucoma by an ophthalmologist. I warned the two physicians and the bella donna was discontinued. But one would have thought that a specialist in treating a patient then about eighty and wearing glasses would have inquired if she suffered from glaucoma! So we plead here for warning about the deleterious effects of bella donna and atropine for those suffering from glaucoma.

Strangely our Federal funds—allotted for medical research are not utilized to warn the public. Only the informed public can protect itself from harm. When there is no warning the trusting public feels a product or drug or food is safe. Members of Congress must reflect that their loved ones are also being exposed to these environmental hazards. Without good health and a zest for living—profits and a good income lose much of their luster. Let us have warnings and safeguards and a reduction in profits—if it means a gain in health.

We refer in general terms to FDA's budget needs—but we are aware that the Agency is vigorously trying to clean up the serious Salmonella contamination of our foods. It has enormous responsibilities in enforcing the Drug Abuse Act. And now it is fighting for fair Regulations for the Fair Labeling Act. It deserves financial consideration commensurate to carrying out its responsibilities to the public.

I thank you for your patience.

SENATORS MANSFIELD AND METCALF URGE INCREASED APPROPRIATIONS FOR SUNDRY PROGRAMS

Senator HILL. I have received from Senator Metcalf, of Montana, on behalf of himself and his colleague, Senator Mansfield, a series of statements on sundry accounts for the Department of Health, Education, and Welfare. I shall place these statements in the hearings for the guidance and information of the committee and of the Senate.

(The statements referred to follow:)

This is Senator Mansfield's statement and mine in support of budget requests for the Departments of Health, Education, and Welfare and Labor for fiscal 1968.

We appreciate the opportunity to state Montana's case for these appropriations. We seek restoration of funds which have been cut from the budget for the vital functions of these Departments.

I am a member of the Government Operations Committee. For some time we have been concerned with the State-Federal relationship in regard to the grant-in-aid formulas.

Senator Mansfield and I are convinced that we can devise a more equitable formula for allocating Federal funds to the sparsely populated states. The term "Cost of Space" has been devised by Dr. Karl Kranzel, Professor of Rural Sociology at Montana State University. This concept identifies the problems of rural America—the sparsely populated areas of our nation. In particular, it points out the difficulty of using an across-the-board formula for both the rural and urban areas of America. In our testimony we will make specific reference

to this fact and demonstrate how it has effected several of the programs to which we will address ourselves in this testimony. I will brief our testimony here and ask your permission to file a more expanded version of the testimony for the record.

Senator Mansfield and I are disturbed by the serious reductions in the budget for Library Services and Construction. We ask that \$10 million be added to the budget request for Title I, Public Library Service, and \$22,815,000 for Title II, Public Library Construction, to bring both up to the full authorization. We also suggest an additional appropriation of \$2,680,000 for Section B, Title IV of the Library Services and Construction Act which provides services for the physically handicapped.

The budget request for Title V of the Elementary and Secondary Education Act, providing educational services funds to the states, is \$75,546 less than the fiscal 1967 appropriation. We ask that this amount be restored. We also seek an additional \$32,000,000 for basic services under Title III of NDEA to bring this appropriation up to the fiscal 1967 level.

We note that section 103, Title I, of the Higher Education Facilities Act, Construction of Public Community Colleges, is \$9,960,000 less than the fiscal '67 appropriation. Section 104, Other Undergraduate Institution Construction, is \$53,340,000 under the 1967 appropriation. We urge that the Committee restore both to the fiscal 1967 level.

P.L. 874 requires an additional \$42,000,000 appropriation if we are to pay entitlements to new districts which have become eligible for aid under P.L. 89-750; providing assistance to school in Federally affected areas. Senator Mansfield and I support this request.

We ask that the formula which was designed to fund Vocational Education Research be followed. This formula provides that 10% of the Vocational Education Budget be earmarked for this program under Section 4(c), P.L. 88-210. This formula would authorize \$22.5 million for fiscal 1968. The request is for \$17,100,000. The House reduced this figure to \$13,550,000. Senator Mansfield and I ask that this program be funded at full authorized level.

We also ask that the House reduction of \$10,000,000 be restored to Title IV, NDEA, which provides funds for the NDEA graduate fellowship program.

We have no specific amount to request with regard to P.L. 89-750, Section 161, which provides education for the handicapped. We note the request here is for \$15,000,000. This is a good start but it is far short of the full authorization, \$154 million. An additional \$10 million is needed to bring the Maternal and Child Health and Crippled Children's funds up to the level of the fiscal '67 appropriations. Senator Mansfield and I strongly urge that \$55 million be appropriated for each of these programs for fiscal 1968.

We also seek an additional appropriation of \$112,000 for Hospital Construction and Modernization and Related Health activities in Montana. This will bring the appropriation for Montana up to \$1,370,000. At this level we can go forward with Hospital Construction and Modernization in a realistic manner.

Finally, we ask the Committee to give consideration to our request for appropriations for 1968 at the \$22 million level for the Bureau of Employment Security. The cutback in this program in fiscal 1967 has had a serious effect on our program in Montana. The fiscal '68 budget request is for \$20,620,000. This again is less than the '67 appropriation and \$1,389,000 less than the '67 request. We suggest this program be funded at the level requested in fiscal 1967—\$22,000,000.

This concludes my summary statement.

LIBRARY SERVICES AND CONSTRUCTION

Mr. Chairman, when I was a member of the House of Representatives I served on the House Education and Labor Subcommittee which put the original Library Services Act into final form. In the 89th Congress, I cosponsored with Senator Hill and 13 others, S. 3076, P.L. 89-511, the 1966 amendments to the Library Service and Construction Act. This legislation and the splendid task it is accomplishing still vitally interest me.

I was distressed when I studied the budget estimates for this vital program. Under Title I, Public Library Service, the 1967 authorization was \$35 million and the '67 appropriation was \$35 million. The '68 authorization is for \$45 million but only \$35 million is requested. This means that Montana will receive \$210,196

or \$37,103 less than if Congress appropriates the full amount authorized. Senator Mansfield and I urge that serious consideration be given to appropriating the full authorization, \$45 million for fiscal 1968.

Regarding Public Library Construction, Title II of the Act, we note a serious budget cut. \$40 million was authorized and appropriated in fiscal 1967. \$50 million was authorized for fiscal '68 but only \$27,185,000 is requested. Montana received \$212,681 in 1967 and under full authorization we would receive \$249,784. If the budget request is granted, Montana will receive \$165,133 in fiscal 1968 or \$47,548 less than this year. Senator Mansfield and I strongly urge that funds for Title II be increased to the full authorization of \$50 million for fiscal 1968.

We are generally pleased with the \$40,946 that each of the 50 states will receive under the \$2,375,000 appropriation request for Inter-Library Cooperation, Title III of the Act. This figure is \$5,125,000 less than the authorization but \$2,000,000 more than the 1967 appropriation so we are making progress.

Title IV of the Act, Special Library Services, has two sections. One is Section A, State Institutional Library Services. The request is \$2,120,000. This is \$5,380,000 less than the authorization but \$1,495,000 more than the '67 appropriation. Under Section A of Title IV, each state will receive \$40,000 and this is about \$33,000 more than each received in fiscal 1967.

Section B of Title IV provides services to the physically handicapped; the blind and people who cannot physically visit libraries. Last fiscal year each state received \$4,735 for planning purposes. This year they expected to move forward. The authorization here was for \$4 million. The budget estimate is for \$1,320,000 with each state to receive a basic amount of \$25,000 and additional funds depending on population. Again, I emphasize that this population factor, and especially in this instance, should not be the only criteria. Let me illustrate this point further. If you were invalided and lived in Alzada, Montana—that's down in the southeast corner of the state—the nearest public library is 116 miles away at Eureka, Montana, the county seat of Carter County. I point out that only 14 miles of that 116 is paved two lane highway. The rest is what we call improved gravel. For a resident of Alzada to go to his nearest library is the same as suggesting that a citizen of Richmond borrow his books from the Library of Congress and that's quite a trip on good highway. This situation occurs all over our state—all over the west and southwest in Wyoming, Colorado, Utah, the Dakotas, Arizona, New Mexico, Texas and other states, too. So, \$25,000 is not going to go very far in supplying library services for the handicapped. Senator Mansfield and I are most earnest in our request that Section B of Title IV be funded at full authorization—\$4 million. We also urge that those responsible for establishing formulas for allocation of funds above basic amounts attempt to identify a system which takes into account the "Cost of Space" in the sparsely populated states.

There is another fact we would like to bring to the Committee's attention. This is the problem we in Montana and other states face when we attempt to coordinate state matching funds with Federal funds. In many states, Montana included, the legislatures meet every two years. When the Federal government initiates and authorizes a program in a year that the legislature is not in session, it is two years before many states can participate. This, in fact, is just what happened this past year in Montana. We were unable to take full advantage of some programs under the Library Services and Construction Act because we had to wait until the middle of March 1967 when the state legislature authorized and appropriated matching state funds. We mention this in pointing out why it would appear that some states have not used their allocation. At this point, I ask that letters from Mrs. Ruth Longworth, State Librarian, and Mr. David S. Brewer, Chairman of the Library Planning Committee of Kalispell, Montana, be included in the hearing record.

MONTANA STATE LIBRARY,
Helena, Mont., June 26, 1967.

HON. LEE METCALF,
Senator from Montana,
U.S. Senate, Washington, D.C.

DEAR LEE: Funds for fiscal 1967 under Title II of the Library Services and Construction Act are fully committed for Montana. The City of Billings has applied for a grant in the amount of \$280,556.00 and this project has been approved.

We have been advised by the office of education to hold the application of this project to a Library Services Branch until after July 1st since the new law allows a two year period for expenditure.

Projects in the amount of \$55,000.00 have been tentatively approved for Valier and Kalispell for fiscal 1968. Both projects need more than this amount if funds are appropriated. On file are requests for assistance from Forsyth, Chinook, Harlowton, Bozeman, Missoula and Helena.

We will be endlessly grateful for any help you may give in securing additional funds for this title as well as the other programs.

Most sincerely,

RUTH O. LONGWORTH, *Librarian.*

MONTANA STATE LIBRARY,
Helena, Mont., April 28, 1967.

HON. LEE METCALF,
*Senator from Montana,
U.S. Senate, Washington, D.C.*

DEAR LEE: I know you have heard from many of your good friends concerning Montana's needs for the full appropriation available under the Library Services and Construction Act—particularly the construction title. I know too that you will do everything you possibly can to help us. Billings, Kalispell, the small town of Valier, Forsyth and Chinook are all expressing interest. Soon we hope to stimulate interest in Bozeman, Missoula and Helena in a building program. I need not belabor the point I know, but I will again thank you in advance for all your wonderful and effective help.

Most sincerely,

Mrs. RUTH O. LONGWORTH, *Librarian.*

SAN FRANCISCO, CALIF., *June 27, 1967.*

Senator METCALF,
Senate Office Building, Washington, D.C.:

Montana libraries have critical need of full appropriations provided under the Library Services and Construction Act. With House appropriation figures we stand to lose a total of nearly \$163,000 for all titles. Your help is vital to our fine program.

RUTH LONGWORTH,
Montana State Library, Helena, Mont.

KALISPELL, MONT., *May 18, 1967.*

HON. LEE METCALF,
U.S. Senate, Washington, D.C.

DEAR SENATOR METCALF: I am writing you concerning the 1968 appropriation for the Library Services and Construction Act, Title II.

I am chairman of a local planning committee which is attempting to arrange for the repair and renovation of a portion of the old Kalispell Post Office building which will provide space for a consolidated city-county library. Our application for assistance—via Ruth Longworth at Helena—under the Library Services and Construction Act has been approved and has high priority and will be allocated provided the normal planned appropriation is not cut back. The rest of the local money also appears to be available this next fiscal year.

This project, at times in the past, seemed "nip and tuck" but now appears to be moving ahead if this \$40,000 from Federal Assistance is available. Consequently I urge you to use your influence to obtain for Montana the planned for appropriation. I am sure this will assure a smoother transition into more permanent and more adequate library facilities and hence increased service in Kalispell and the surrounding area.

Yours truly,

DAVID S. BREWER,
Chairman, Library Planning Committee.

ELEMENTARY-SECONDARY EDUCATION ACT, TITLE V, NATIONAL DEFENSE EDUCATION ACT, TITLES III AND X

Miss Harriet Miller, Montana State Superintendent of Public Instruction and one of the most knowledgeable and effective Chief State School Officers I have known, has brought to the attention of Senator Mansfield and me a complicated and disturbing problem facing Montana and its administration of ESEA, Title V and NDEA, Titles III and X, appropriation matters.

Frankly, we do not know how the problem should be solved but we do have some suggestions. This next fiscal year Montana will receive \$176,790 if the budget requests for ESEA Title V and NDEA Titles III and X are approved. This is \$75,546 less than the 1967 appropriation for Montana. In fiscal 1967 \$18,700,000 was appropriated under Title V—ESEA. The 1968 estimate is for the same amount. The request in 1967 for NDEA Title III was for \$54,200,000. Last year the Senate added \$25,000,000 and brought this appropriation up to \$79,200,000. I point out that Title III is for Basic Services—Reading, Writing, Arithmetic.

NDEA Title X, Grants to States for Statistical Services, has not been increased in the fiscal 1968 request which remains \$2,250,000, the same appropriation as for fiscal '67.

In fiscal 1967, Montana received \$152,336 under ESEA Title V, \$50,000 under NDEA Title III, and \$50,000 under NDEA Title X. This gave Montana a total appropriation for School Services of \$252,336. This year the appropriation request for Montana under all three Titles, which have been combined for administrative purposes, is \$176,790. As I have indicated, this is \$75,546 less than for fiscal 1967.

For fiscal 1968 the request for NDEA Title III is for \$47,000,000. This is \$15 million less than the '67 request and \$32,200,000 less than the '67 appropriation. The Office of Education has told me there really is no problem because they have established a Special Projects fund and have requested \$4,446,500 for fiscal '68. Mr. Chairman, Montana has a fine, developing system of Elementary, Secondary and Higher Education, but we simply cannot compete with the grantsmanship of states such as New York, Illinois, Michigan, Wisconsin, Florida, California and others who have staffs in state education officers designing projects on a full-time basis. We know that if Montana must rely on its share of this \$4,446,500 for Special Projects that that share will be small 'f, indeed, we are able to successfully compete for any of it.

Miss Miller has suggested, and Senator Mansfield and I agree, that Congress should restore the \$75,546 reduction by asking that this amount be added to the appropriation under Title V of ESEA. The Committee might find other solutions but the point is clear, Senator Mansfield and I urge that every consideration be given to restoring this cut in education service funds for Montana.

We also recommend that again this year the Senate take action with regard to NDEA Title III request and add an additional \$32,000,000 to the '68 request to bring it up to the '66 and '67 appropriation level.

At this point, I ask that a letter and a telegram from Miss Harriet Miller outlining specifically the problems of her Department in this matter be included in the record.

STATE OF MONTANA,
SUPERINTENDENT OF PUBLIC INSTRUCTION,
Helena, June 19, 1967.

HON. MIKE MANSFIELD,
*Office of the Majority Leader,
U.S. Senate, Washington, D.C.*

DEAR SENATOR MANSFIELD: Thank you for your letter of June 6 and the enclosed letter from Mr. Alford dated May 29, 1967. I feel compelled to make the following comments about Mr. Alford's letter.

1. The problem of administration in Montana is complicated by the fact that we do have a number of school districts, but the basic problem is that the administrative structure required for Montana is the same as that required for New York and yet we receive \$75,000 for administering Title I and New York receives \$1,136,747.

2. Montana did not request revised forms. We requested shorter forms—and less complicated forms—after the USOE had embarked on the revision.

3. To follow the USOE "suggestion" would eliminate from ESEA Title II benefits the very schools which most need help. They haven't the foggiest notion of how much it costs to administer their regulations—as if \$50,000 were plenty!

I am always amused that \$50,000 is supposed to be more than enough for Montana and yet we find Texas with \$273,033.25 and Ohio with \$275,713.65.

4. This is the same runaround we always get. Our Title V allocation of \$152,336 does not provide "extra" ESEA V money for discretionary use. New York with \$1,101,390 and Iowa with \$296,258 can have "extras."

5. This is a lovely gimmick for gobbling up the NDEA programs and giving us less money while the USOE itself gets *more*.

I find the whole matter of having to deal with the USOE totally frustrating!

Sincerely,

HARRIET MILLER.

HELENA, MONT., June 10, 1967.

HON. LEE METCALF,
Washington, D.C.:

Would appreciate information and help with problems Re: ESEA Title V and NDEA Titles III and X. (1) Office of Education has requested that we include in FY 1968 application for ESEA V those state education agency functions formerly supported under NDEA III and X. OE instructs us to base this combined application on \$176,790 for FY 1968. In FY 1967 Montana received \$152,336 for ESEA V plus \$50,000 for NDEA X plus \$50,000 for NDEA III supervision and administration, totaling \$252,336. These services cannot be continued if support is cut to \$176,790, respectfully urge your assistance in preventing this cut. (2) Our personnel informally advise that there will be no appropriation for NDEA III and NDEA X, except one \$2 million amount for NDEA III administration (excluding State supervision). As I have advised you earlier in reply to inquiry, NDEA programs have been valuable to Montana, easily administered and paperwork has been held to a minimum. Believe it is in best interest of Montana education to continue NDEA and not to lose these valuable programs through combination with ESEA. Conversations with our acquaintances indicate NDEA X may have been saved, as of this week. Would appreciate information of status of legislation and appropriations affecting NDEA. (3) Amendment to ESEA V distribution formula to provide more support for sparsely populated States is of great importance to Montana. Present formula for FY 1968 would provide \$176,790, whereas amendment would provide \$252,336. Additional amount would be most helpful in carrying out essential duties under ESEA. However, if additional amount is required to replace funds formerly available under NDEA III and NDEA X, as OE now indicates, there will be no assistance for growing responsibilities for administering the Federal programs, much less aid for "strengthening State Education Agency" as ESEA V is intended to do.

HARRIET MILLER, *State Superintendent*.

HIGHER EDUCATION FACILITIES ACT

In Fiscal 1967, Montana received \$1,898,590 under sections 103-104 of Title I of the Higher Education Facilities Act. Senator Mansfield and I note with alarm that the request for Fiscal 1968 for our State is \$1,688,384. This is \$210,206 less than last Fiscal year.

It is not necessary for me to again point out to the Committee the additional cost of services in the sparsely populated States. However, I will stress that construction costs in these States, Montana included, is on an average higher than in the more populous States. This is because materials must be hauled long distances from point of manufacture or finishing; construction workers in many skills are not readily available; equipment must often be move great distances by the contractors to the construction site. Add to these facts the additional building costs Montana faces because of topographical and climatic conditions and you have the reason for our concern with this reduction in education facilities construction of \$210,000. I estimate that in terms of an average construction appropriation of approximately \$1,700,000, the additional cost in Montana would equal the \$200,000 we have been denied this fiscal year. In other words, to build the facilities in Montana equal to those in other parts of the country, we would need an additional \$400,000.

In Fiscal 1967, the appropriation for section 103 was \$99,660,000. For Fiscal 1968, the budget estimate is \$89,700,000, or \$9,960,000 less than the 1967 appropriation—even after \$10,000,000 was transferred to this fund from the Fellowship program under Title IV, NDEA.

Section 104 of Title I received \$353,340,000 in appropriations in Fiscal 1967. The Budget estimate for Fiscal 1968 is for \$300,300,000. The House has further reduced this amount to \$300,000,000.

Senator Mansfield and I seek restoration of \$9,960,000 to the appropriation for section 103 and a restoration of \$53,340,000 to the appropriation for Section 104. We further urge the committee to restore the \$210,206 cut from the appropriation to Montana under Title I.

At this point, I ask the inclusion of letters from Robert Pantzer, President of the University of Montana and James E. Short, President of Western Montana College, supporting the restoration we seek.

WESTERN MONTANA COLLEGE
OF THE MONTANA UNIVERSITY SYSTEM,
Dillon, May 19, 1967.

Hon. LEE METCALF,
U.S. Senate,
Washington, D.C.

DEAR SENATOR METCALF: On behalf of the Western Montana College and the other units of the Montana University System I should like to express my concern over the possibility of Title I funds under the Higher Education facilities Act of 1963 being reduced in the coming fiscal year from annual amounts previously allocated. The building programs approved by the 1967 Montana legislative body were based on the assumption that the Title I fund level would be maintained. If the level is not maintained some very necessary higher education facilities cannot be funded. We urge that you use your influence to keep the Title I funds at the previous level.

Secondly, we do not endorse HR 7819. We would like to see comprehensive planning grants available for higher education and administered through the Bureau of Higher Education for HEW and available directly to the states rather than to have this merged with elementary and secondary and administered through the Bureau of Elementary and Secondary Education.

We also are generally opposed to HR 6232 which would remove the 3% interest rate on Title III loans. This will probably not affect our institution in the immediate future but we believe that maintaining a low interest rate on college facilities is one way of curbing inflation and extending necessary higher education facilities at a reduced cost throughout the nation.

We truly appreciate what you have done for us in helping us with our building program in the past several years.

Sincerely,

JAMES E. SHORT, *President.*

UNIVERSITY OF MONTANA,
Missoula, May 31, 1967.

Hon. LEE METCALF,
U.S. Senate
Washington, D.C.

DEAR SENATOR METCALF: It is my understanding that legislation is pending which will consolidate the administration of certain higher education activities with the Bureau of Elementary and Secondary Education in Washington, D.C. In my judgment such a move is neither wise nor necessary. I hope you share my misgivings on this important issue and will lend the prestige of your office to the defeat of this portion of HR 7819.

Secondly, I am disturbed that the proposed appropriation under Title I of the Higher Education Facilities Act of 1963 would mean for the State of Montana a reduction of \$200,000 (15%) compared to the allotment of \$1,800,000 for fiscal year 1967. Intermediate and long-range planning is aborted by fluctuations of this magnitude. Your support in restoring the sum proposed to be cut would be appreciated.

Sincerely yours,

ROBERT T. PANTZER, *President.*

ASSISTANCE FOR FEDERALLY AFFECTED AREAS

Public Law 81-874, Title I, was amended by P.L. 89-750, which was approved November 3, 1966. This law made new school districts, which were previously ineligible for funds, eligible for assistance under our program of providing

financial assistance to schools in Federally impacted areas. Senator Mansfield and I supported this legislation. On November 7, 1966, P.L. 89-787 was enacted. This bill authorizes the payment of funds to schools in Federally impacted areas but contains language which prohibits the use of these funds for payments to applicant school districts which became eligible for an entitlement because of the liberalized eligibility requirements provided by P.L. 89-750.

Subsequently, the Congress enacted P.L. 90-21. This Act appropriated \$20 million to pay entitlements under 874 as amended and \$48 million to pay entitlements under P.L. 815 which provides for School Construction in Federally impacted areas. In Conference, \$30,000,000 was approved for P.L. 815 but nothing was approved for P.L. 874.

In Fiscal 1967, the appropriation for P.L. 874 was \$416,200,000. For Fiscal Year 1968, the request is for the same amount. This is not enough for continuing and increasing entitlements and at the same time provide monies for the new districts which were made eligible under P.L. 89-750.

Senator Mansfield and I have been informed that if these new districts are to be assisted, an additional \$42,000,000 will be needed. We request that the Committee give this matter its close attention.

I ask that a letter from Harriet Miller, Montana State Superintendent of Public Instruction, be included in the Hearing at this point. Miss Miller's letter points out Montana's problem regarding this matter.

STATE OF MONTANA,
SUPERINTENDENT OF PUBLIC INSTRUCTION,
Helena, Mont., May 15, 1967.

HON. LEE METCALF,
U.S. Senate,
Washington, D.C.

DEAR SENATOR METCALF: As you know, P.L. 89-750, approved November 3, 1966, amended various provisions of Title I of P.L. 81-874. These provisions significantly affected program operations for applicant districts including a liberalization of eligibility requirements and a broadened definition of federally-connected children. As a result several districts, which were previously ineligible, are now eligible for funds.

However, P.L. 89-787, enacted November 7, 1966, which provided the funds for federally impacted areas contained language prohibiting the use of these funds for payment to applicant school districts which became eligible for an entitlement because of the liberalized eligibility requirements provided by P.L. 89-750. Consequently, in Montana, we now have applicant districts who meet the minimum eligibility requirements, but no funds are available from the current appropriation.

It appears to me that a supplemental appropriation will be necessary if the claims of Montana school districts, which have become eligible for assistance as a result of the liberalized requirements, are to be funded.

I should appreciate anything you might be able to do in this regard.

Sincerely,

HARRIET MILLER.

VOCATIONAL EDUCATION

Mr. Chairman, P.L. 88-210, Section 4(c), provides that 10% of the vocational education budget be set aside for support of research developmental and pilot programs. In fiscal 1967, \$22.4 million was authorized but only \$10 million was appropriated. This fiscal year \$22.5 million is the figure the 10% formula projected. The budget request is for \$17,100,000 for fiscal '68. The House allowance is \$13,550,000. Senator Mansfield and I view vocational education as one of the prime target areas in the whole scope of our educational endeavor, since a majority of our youngsters do not go on to college. Education experts tell us that only 20% of those students who enter the 9th grade will eventually receive a college degree. We have expansive programs for these 20% but what of the other 80%? Again we are told that of this 80% half will require vocational training or occupational re-training before 1975. The unemployed rate for those between ages 14-19 was 12% in 1966. This was three times that of all other workers. The rate of unemployment among non-white teenagers was even higher.

We need to know more about how to place and maintain the young worker in the mainstream of the work force. This we will learn only through con-

finishing research. Unfortunately, the \$10 million research appropriation for fiscal 1967 was only sufficient to continue, with many reductions, projects begun the previous year, and a similar appropriation this year would also preclude the possibility of undertaking new projects. This would be extremely debilitating since the impact of research is cumulative, the buildup has just begun and the return rate on the investment can be expected to accelerate. Funds are now needed to capitalize upon potential in personnel and research findings that have just begun to be developed. Additional studies should be undertaken to create new instruments and techniques by which to evaluate existing and innovative vocational programs more precisely and comprehensively; many more vocational teachers and supporting staff need updating in modern educational techniques, and new ways of organizing and administering programs should be investigated; theories of occupational choice and career development require further elaboration and testing, while the practical problems of implementing the theories should be examined; the problems associated with adult education have barely been tapped and basic studies and pilot projects are required to bring improvements in techniques for identifying occupational requirements for translating the requirements in to viable vocational curriculums.

The \$22.5 million we urge for fiscal 1968 will permit using \$10 to \$12 million to continue ongoing projects and will also provide funds for undertaking a modest number of new research, development and training activities. In our opinion, these activities are essential to the continued improvement of education for the world of work.

Senator Mansfield and I request that the Committee take action to fund Section 4(c) of the Vocational Education Act of 1963 at the full authorization, \$22.5 million for fiscal 1968.

At this point I ask inclusion of letters from Roy E. Huffman, Vice President for Research at Montana State University and the agency response from David S. Bushnell, Director, Division of Adult and Vocational Research.

MONTANA STATE UNIVERSITY,
OFFICE OF THE PRESIDENT,
Bozeman, Mont., June 9, 1967.

Senator MIKE MANSFIELD,
Senator LEE METCALF,
Congressman ARNOLD OLSEN,
Congressman JAMES BATTIN.

DEAR SIRs: During the first six months of 1966, a faculty committee here at Montana State University worked on the development of a research proposal to the Office of Education entitled, "Research on Problems of Vocational Education in Sparsely Populated Areas". Following some preliminary review by the Office of Education, the proposal was formally submitted on June 2, 1966. Dr. Mary Lee Hurt of the Educational Resources Development Branch of the Office of Education came to Bozeman in the late summer of 1966 to discuss the research proposal with us. The proposal was approved and signed by the Commissioner of Education last fall—I believe in October. It was not funded at the time because of a lack of available money.

I am enclosing a copy of a letter to Dr. Mary Lee Hurt that brings this story up-to-date. It is our judgment that this research should be done and that it will develop information important to the solving of the problems of vocational education in Montana. You will note that we are asking that the research proposal be actively considered for funding.

Sincerely yours,

ROY E. HUFFMAN,
Vice President for Research.

MONTANA STATE UNIVERSITY,
OFFICE OF THE PRESIDENT,
Bozeman, Mont., June 9, 1967.

Dr. MARY LEE HURT,
*Office of Education, Department of Health, Education, and Welfare,
Washington, D.C.*

DEAR DR. HURT: Following my telephone conversation with you when I was in Washington the first week in May, we have reviewed again our proposal for a study entitled, "Research on Problems of Vocational Education in Sparsely Populated Areas". You pointed out that considerable time has elapsed since

the Commissioner of Education approved our research proposal last fall but placed it on the shelf because funds were not available. Also, we discussed the desirability of taking a look at the relationship of our research proposal to the actions of the 1967 Montana Legislature with regard to vocational education.

I asked Professor John Bower, one of the project leaders on our proposed research, to discuss the matter again with the State Department of Public Instruction. The consensus reported to me by Professor Bower was to the effect that the research we proposed will not duplicate or conflict with the work the State Department will be carrying on in the area of vocational education. More important, it is concerned with a research area on which the State Department of Education will not be developing information.

I also asked Dr. Earl Ringo, Director of our School of Education, to discuss the research proposal with his faculty in terms of the present importance of our proposed research on vocational education in sparsely populated areas. The consensus reported to me by Dr. Ringo was to the effect that nothing has happened since we submitted the proposal to decrease the importance and timeliness of the research as it is now outlined in the approved project. Some of the things that may develop as a result of the recent actions of the Montana Legislature would seem to increase the importance of this research.

We wish to request, therefore, that our research proposal entitled, "Research on Problems of Vocational Education in Sparsely Populated Areas", be actively considered for funding at the earliest possible date. We appreciate your assistance in this matter.

Sincerely yours,

ROY E. HUFFMAN,
Vice President for Research.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,

OFFICE OF EDUCATION,

Washington, D.C., June 27, 1967.

HON. LEE METCALF,
U.S. Senate,
Washington, D.C.

DEAR SENATOR METCALF: This is in response to your request of June 26. I would like to answer your question on what impact reductions in the research funds authorized under Section 4(c), P.L. 88-210, has had on our ability to support the many worthwhile projects submitted to this office for consideration. This has particular relevance to Dean Palmer's proposal (No. 6-2961) regarding the design of vocational education programs for sparsely populated areas.

The appropriation for fiscal year 1968, as passed by the House of Representatives, reduced the Administration recommended funding level of \$17,100,000 by \$3,550,000 which severely limits the progress of the Adult and Vocational Research program and greatly inhibits plans for new research and development efforts during the coming year.

A recent calculation confirmed that more than \$11.7 million will be required in fiscal year 1968 to fund continuing projects. The remaining \$5.4 million planned for the following activities will, of necessity, be limited to \$1.65 million as a result of this reduction:

New Careers Programs—Research and demonstration projects emphasizing the development of educational programs for occupations at the technical and subprofessional level in such fields as health services, social welfare, urban development and recreation. This reduction will eliminate 16 projects for a total of about \$800,000.

Research Coordinating Units—These units serve as a central focus for vocational education research at the state level and provide necessary expertise in assisting state and local agencies in developing proposals. Forty-four states have such units, with a continuation cost this coming fiscal year of \$1.1 million (representing a 30% cutback over what was requested by the units). No new units can be funded (estimated cost \$250,000).

Summer Institutes—These institutes provide a mechanism for disseminating research findings directly to classroom teachers and thereby contribute to the utilization of improvements in vocational education. During FY '68 it was planned that this program would reach 3,000 teachers and give funding support to 60 colleges and universities to conduct this training at a cost of \$2 million. This program will have to be cut by 75%.

Curriculum Development—By 1970, it is estimated that 6,750,000 students will be enrolled in vocational programs. Curriculum development and improvement will help these future wage earners to be better prepared and qualified for new and existing job opportunities. A number of large projects estimated at \$1.1 million cannot now be undertaken in this critical area.

Evaluation—Plans to support projects to evaluate the effectiveness of new curricula, teacher training methods, and administrative practices; to develop new and innovative approaches to the technology of program evaluation; and to finance the evaluation of dissemination procedures used to transfer innovative approaches to vocational education into educational practice have been reduced by \$400,000.

These proposed cuts in the fiscal year 1968 budget should be viewed against the backdrop of severe reductions in fiscal year 1967. As you may know, the provisions for research under Section 4(c), P.L. 88-210, authorized and setting aside of 10 percent of the total appropriation for support of research developmental and pilot programs. We expected \$22.4 million in fiscal year 1967 and only \$10 million was authorized. This led to the stockpiling and carry-over of a large number of well designed and worthy projects, of which Dean Palmer's was one.

I hope this information will be of help to you. If we can be of any further assistance, please do not hesitate to call.

Sincerely yours,

DAVID S. BUSHNELL,
Director, Division of Adult and Vocational Research.

NATIONAL DEFENSE EDUCATION ACT, TITLE IV

Title IV of the National Defense Education Act of 1958 was extended through fiscal 1968 by P.L. 88-665. This Title provides funds for the NDEA Fellowship Program. This is one of the important titles of NDEA. The purpose of this program is to increase the number of well-qualified college and university instructors by awarding fellowships to graduate students working toward their doctoral degrees in preparation for academic careers. These fellowships are awarded to individuals accepted for study in graduate programs approved for support by the U.S. Commissioner of Education in accordance with terms of the law. The fellows are nominated by the graduate schools. Each receives a stipend of \$2,000 the first year, \$2,200 the second year and \$2,400 the third year plus \$400 for each dependent. The participating institution receives \$2,500 for each academic year, less any amount charged the fellow for tuition.

The appropriation for fiscal 1967 was \$80,842,000. The '68 request to the Bureau of the Budget was for \$107,300,000. The Bureau reduced the request to \$96,000,000. The House further reduced this by \$10 million, supposedly adding this \$10 million to the Higher Education Facilities Act Title I, Construction of Public Community Colleges and Technical Institutions. Senator Mansfield and I realize that we need to continue to build new facilities but we submit that the brick and mortar are not enough—that facilities must be staffed by a well-qualified faculty.

Each of these fellowships average about \$5,000 per academic year, \$2,400 to the fellow and \$2,500 to the institution. If the Senate goes along with the House cut we will disqualify 2,000 scholars; potential members of college and university faculties.

The House allowance under NDEA IV is for \$86,000,000. Senator Mansfield and I request that the Committee take a hard look at this program. We suggest that the \$10 million be restored to Title IV, bringing it up to the \$96,000,000 budget request.

I ask that a letter from Robert Pantzer, President of the University of Montana, urging support for NDEA fellowships, be included in the hearing record at this point.

UNIVERSITY OF MONTANA,
Missoula, May 31, 1967.

HON. LEE METCALF,
Senate Office Building,
Washington, D.C.

DEAR SENATOR METCALF: Enclosed is a copy of a telegram just sent to Senator Russell. It is realized that you are not a member of the Senate Subcommittee on Appropriations for Labor, Health, Education, and Welfare which will

have public hearings soon after June 1st. It is our attitude that this NDEA fellowship program is very vital to the purposes of higher education in America today. Any assistance which can be provided by your office will be helpful.

Sincerely yours,

ROBERT T. PANTZER, *President.*

EDUCATION OF THE HANDICAPPED

Section 161 of P.L. 89-750 added Title VI to the Elementary and Secondary Education Act of 1965. This section authorized \$50 million dollars in fiscal 1967 for the Education of handicapped youth. \$2,500,000 was appropriated. The authorization for fiscal 1968 is for \$154,500,000. The Budget estimate is for \$15,000,000. Senator Mansfield and I applaud this increase and urge that we continue to increase this appropriation in the next few years until we are at a level where we can truly do the job that must be done in educating the deaf, blind, crippled—the child who is a victim of cerebral palsy or who has a speech defect, the child who is retarded but educatable.

From the White House to Capitol Hill and across the land we have given increased lip service to these unfortunate youngsters. Now we must enforce our promises with action—action dollars—millions of dollars to provide the laboratories, the research, the specialists, the schools, the prosthetics and the practice to provide these youngsters with the opportunity for an even start, a start that will insure a productive, happy life instead of one of depression and disappointments.

I ask that a letter from Mrs. E. Manley Briggs of Boise, Idaho, which demonstrates a care and concern for this program be included at this point in the Record.

BOISE, IDAHO, *January 19, 1967.*

Senator LEE METCALF,
Senate Office Building,
Washington, D.C.

DEAR SENATOR METCALF: I am writing in regard to appropriations to fund P.L. 89-750, pertaining to education of the handicapped.

As an audiologist, teacher of the hearing handicapped, and board member of this region's United Cerebral Palsy organization, I want to urge you strongly, to support appropriations for this bill, to begin in the fiscal year 1967.

The progress which handicapped children will make as a result of this appropriation, will be evidence of their appreciation, and ours, for your help.

Best personal regards from all the E. W. Briggs family in Missoula.

Sincerely,

SUSAN BRIGGS.

MATERNAL AND CHILD HEALTH AND CRIPPLED CHILDREN'S FUNDS FOR MONTANA

Senator Mansfield and I have been informed by Dr. John S. Anderson, Executive Officer for the State Board of Health for Montana, that the crippled children's program in Montana will have to be drastically curtailed by March 1968 unless additional funds are authorized. Likewise, the Maternal and Child Health program will be adversely affected.

Public Law 89-97 authorized \$55 million for each of these programs. Last year each program was funded at \$50 million, or \$5 million less than the authorization. As a result, many states, Montana among them, were forced to find additional funds or to cut their programs.

Again in the fiscal 1968 budget the request for each of these programs is \$5 million less than the authorization despite President Johnson's expressions to the Congress of his concern for the health and welfare of the children and youth of the nation.

A \$5 million increase for each program would mean an additional \$14,183 for Montana's Maternal and Child Health Program and \$14,437 more for our Crippled Children's Program. Senator Mansfield and I strongly urge that \$55 million be appropriated for each of these programs for fiscal 1968. This would mean \$222,131 for Montana's Maternal and Child Health Program and \$224,534 for the Crippled Children's Program.

At this point, I ask that a letter from Dr. Anderson be included in the record followed by a report from the office of the Commissioner of the Welfare Administration, which I requested.

STATE BOARD OF HEALTH,
Helena, Mont., April 5, 1967.

Senator LEE METCALF,
Senate Office Building,
Washington, D.C.

DEAR SENATOR METCALF: Thank you for your continuing interest in our budgetary problems for Children's Bureau programs. In your last letter you asked for more detailed information.

We have not encountered money problems with the Maternal and Child Health program. This is because we have had staff vacancies. Should we ever fill these positions, we would be able to develop programs that would exceed the anticipated allocation of MCH funds to Montana.

Our real problem has been with the Crippled Children's program.

When the Regional Heart Program at Seattle was discontinued this increased our annual cost by \$30,000. The cost had previously been met by the Children's Bureau outside of our grant-in-aid.

Cost of physician services went up 82%, or \$35,000, after fiscal year 1965, when we commenced paying on the basis of 100% of the Montana Medical Association Average Fee Schedule instead of 55%. It is no surprise to you to know that our hospitalization costs have been increasing at between 5% and 10% per year, adding from \$10,000 to \$15,000 annually.

Our budget this year was completely exhausted of funds on April 1, 1967 and we announced to the physicians and hospitals that we were discontinuing the program for the rest of this fiscal year. Since then the Children's Bureau has found and furnished us with \$40,000 of non-matching Crippled Children's funds. We can not count on this kind of relief in the future.

There is really no substitute for our Crippled Children's program in Montana. When we are out of funds some very dramatic cases have to be turned down. It is truly tragic, and not understood by the parents. It is then that the Governor and the Montana Congressmen get letters asking why something can't be done.

I hope that the previously approved increase in the MCH and CC programs under P.L. 89-97, Title II, Sections 201 and 202 will be restored.

Sincerely yours,

JOHN S. ANDERSON, M.D., *Executive Officer.*

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
WELFARE ADMINISTRATION,
Washington, D.C., April 24, 1967.

Hon. LEE METCALF,
U.S. Senate,
Washington, D.C.

DEAR SENATOR METCALF: I am writing in response to your letter of April 11 regarding the effect on the Montana child health programs of maintaining the same level of appropriations for these programs in 1968 as in 1967.

We have discussed your question with a staff member of the Montana State Board of Health. We are informed that there seems to be little doubt that the State health department will have to bring its Crippled Children's Program to a halt in March 1968 because of insufficient funds. The rising costs of hospital care are a major factor in the anticipated curtailment of the program. The effects on the Maternal and Child Health program are not so clear cut, but it appears that it will not be possible to extend existing maternal and child health clinics and funds for the purchase of drugs and biologicals will be limited.

The following table shows the apportionment of Maternal and Child Health and Crippled Children's funds for Montana under the current appropriation of \$50 million and the apportionment if \$55 million were appropriated:

	Maternal and child health	Crippled children
Current apportionment.....	\$207, 948	\$210, 097
With \$55,000,000.....	222, 131	224, 534

Your interest in this matter is greatly appreciated.

Sincerely yours,

JOSEPH H. MEYERS,
Acting Commissioner.

HOSPITAL CONSTRUCTION ACTIVITIES

The budget for fiscal 1968 includes \$1,257,988 for hospital construction and modernization and related health activities in Montana. This is \$60,167 more than was authorized this fiscal year but it is still short of the amount needed to bring many hospitals and medical facilities in Montana up to accepted standards. We realize that this apportionment is made on the basis of population density. As you know, Mr. Chairman, Montana is the fourth largest state in land area and one of the least populated. Members of my staff and the Legislative Reference Service recently completed a study of some of the problems of the sparsely populated states. This study revealed some interesting facts relative to medical costs in sparsely populated areas. We learned that one important measure of a hospital facility is the number of beds per 1,000 population. The national standard was estimated at about 4.5 beds per 1,000. Montana's bed to population ratio was approximately 4.4 beds per 1,000 in 1965. At first glance, that's not bad. However, such figures must be interpreted with care. They do not reflect the additional travel costs that must be borne in the sparsely populated state.

Now let's look at it another way—the ratio of beds per 1,000 square miles. In Montana the ratio is 21 beds per 1,000 square miles. The national average in 1965 was 246 beds per 1,000 square miles. In other words there are, on the average, more than 10 times as many beds per square mile in most of the rest of the United States as in Montana. This means, too, that the people in Montana, on the average, travel ten times as far to receive hospital treatment. Now in addition to increased travel expense, residents of Montana, because of the great distances involved, often must go earlier and stay longer than persons who live in metropolitan centers. This obviously results in more cost and congestion for the hospital. Senator Mansfield and I cite this argument in order to suggest to this Committee, to the Department of Health, Education and Welfare, and to the Surgeon General, who determine the allotments upon which the budget is based, that population should not be the sole criteria. Senator Mansfield and I seek an additional \$112,000 for Montana to bring the appropriation for fiscal year 1968 to a total of \$1,370,000. At this level, Montana can go forward realistically with hospital construction and modernization and related health facilities. At this point, I ask that a letter from V. R. Powers, a member of the Committee of the Hospital Medical and Related Facilities Advisory Council, demonstrating Montana's urgent needs, be included in the hearing record.

I also request the inclusion in the record of letters from Forrest H. Anderson, Attorney General for Montana, W. A. Groff, President, Farmers State Bank, Victor, Montana and Burl E. Hatfield, Administrator, Marcus Daly Memorial Hospital, Hamilton, Montana, supporting additional appropriations for hospital construction at Marcus Daly Hospital, Hamilton, Montana.

MEMORIAL HOSPITAL,
Missoula, Mont., May 18, 1967.

HON. LEE METCALF,
*U.S. Senator, State of Montana,
Washington, D.C.*

DEAR SENATOR METCALF: As one of the members of the Committee of the Hospital Medical and Related Facilities Advisory Council which is appointed

by Governor Tim Babcock of Montana, and having just returned from a meeting of this committee I would like to make the following report.

The committee during its two day session was confronted by many hospitals, whose representatives appeared before the committee, to present their reasons why their hospital was eligible and in need of Hill-Burton or Hill-Harris funds in order that they might either build a new hospital or modernize their existing facility or add on to their present hospital.

The reasons given were very important inasmuch as many of the hospitals are firetraps. They do not pass the State Fire Marshall's fire code regulations. They are crowded. They have patients in the hallway. They are obsolete with obsolete equipment. They just need additional monies to help them in order that they might give first class medical care to the patients in their hospitals.

There are a number of hospitals in Montana that are in the same situation. At this meeting we had nine hospitals represented by board members, doctors, and administrators presenting their cases to our committee. There are additional hospitals in Montana which we do know have similar problems and are obsolete and fire hazards.

With only a portion allotment of Hill-Burton federal money to distribute to these hospitals, it was indeed a problem trying to select which hospital would get the federal monies to upgrade their hospital in their community. This situation is indeed critical. More monies are needed to provide help. These hospitals provide the best patient care in their communities. I am bringing this to your attention, primarily so that you will be aware of it too, and if you have any chance whatsoever to increase the amount of money that Montana will receive under the federal program for aid to hospitals, (Hill-Burton or Hill-Harris), in building hospitals, in modernizing hospitals, or for adding on to hospitals, I am sure that the people in the State of Montana would appreciate it very much as the need is great and urgent.

Very truly yours,

V. R. POWERS,

Administrator, Missoula Community Hospital.

MARCUS DALY MEMORIAL HOSPITAL,
Hamilton, Mont., June 8, 1967.

HON. LEE METCALF,
*U.S. Senate,
Washington, D.C.*

DEAR SENATOR METCALF: I am writing to you concerning the need for additional construction money for Montana hospitals. Several of our communities desperately need enlarged facilities in order to maintain adequate medical care and service.

Prepayment insurance, the advent of Medicare, plus population growth have all increased hospital utilization. The attached information concerning our hospital service area will give you a good idea why immediate expansion is necessary.

This hospital applied to the State Board of Health for Hill-Harris funds in the amount of approximately \$80,000, so that a \$200,000 expansion program can be completed as soon as possible. Daly Hospital has never received financial assistance from any State or Federal program to date. State Board of Health officials indicated help would be forthcoming in the event additional funds from our Federal Government were available to Montana.

I hope you will be able to review the Hill Harris program for Montana, and if at all possible, increase funds to the point that the several critical areas in Montana hospitals can be corrected. At this point in history, adequate hospitalization is very important.

Thank you in advance for any consideration you may give my letter.

Sincerely yours,

BURL E. HATFIELD, *Administrator.*

STATE OF MONTANA,
Helena, June 7, 1967.

HON. LEE METCALF,
U.S. Senator, Senate Office Building,
Washington, D.C.

DEAR LEE: The hospital at Hamilton, Montana is making every effort to get some Hill-Harris money to bring the hospital up to present needs. Apparently, they are now running 125% of capacity and this is not good either for the hospital or for the patients. In order that they can do this Bill Groff and Norris Nichols have advised me that the \$759,000 allocated for Montana for 1967 should be boosted to \$1,000,000. This would mean that the present needs of the hospital would be accomplished.

I hope that through your effort something might be done to aid in the work needed on the Hamilton hospital.

Sincerely yours,

FORREST H. ANDERSON, *Attorney General.*

FARMER'S STATE BANK,
Victor, Mont., June 9, 1967.

Senator LEE METCALF,
Senate Office Building,
Washington, D.C.

DEAR LEE: We are having quite a bit of trouble here in Ravalli County with our local hospital. We have through population growth arrived at a position where we are running approximately 120% to 125% of capacity, and this is not good. We have applied to the state for Hill-Harris Funds and find that they have budgeted on the state level at the rate of \$814,000.00. We need at least an additional \$70,000.00 to \$80,000.00 there, making an appropriation from the federal back to the state of these funds of about \$900,000.00 for us to get in on the modernization program. We have raised here \$120,000.00 and if we can get an additional \$80,000.00 we can complete the re-modernization of the hospital. This addition would provide an additional sixteen beds which are badly needed. I was in hopes that perhaps you could use your influence to see if the funds distributed in Montana could be raised to at least \$900,000.00. One Million would be better, but even at \$900,000.00 we can get our project in.

Anything that you can do will be greatly appreciated. I am enclosing fact sheets that might help. Thanks.

Yours very truly,

W. A. GROFF, *President.*

FACT SHEET, MAY 1967

Marcus Daly Memorial Hospital serves a population of some 14,000 persons. Approximately 15% of this population are over age 65 which tends to show a high percent of Medicare patients. There is every reason to believe that this service area is growing and that more retired people will locate here.

The lumber industry in the hospital service area employs approximately 459 people. This work has a high rate of industrial accidents which indicates the need for available emergency beds.

The U.S. Department of Health, Education and Welfare has the National Institute of Health's largest field laboratory here. Including the professional scientists, the laboratory employs about 175 persons.

The headquarters for the Bitter Root National Forest is located here. Over 300 people work on the Hamilton district, and during the fire season many more people are employed. Also, during the fire season, the Forest Service maintains helicopters in Hamilton which bring many emergency cases to this hospital.

The United States Department of Agriculture now operates Trapper Creek Jobs Corps Conservation Center. This Center is a 200 man permanent camp with an advisory staff of about 50 persons. Both the staff and trainees utilize the services of this hospital.

Agriculture is one of the major industries in Ravalli County. Also, mines near Darby employ some 25 men. The Bitter Root Cannery employs some 300 people during the cannery season.

Outdoor sports such as hunting, swimming, fishing, skiing and tourist travel on Highway 93 bring many people into this area which adds to the hospital service area. Last year some 90 admissions were from outside of this service area.

Hamilton, Stevensville, Victor, Corvallis, Darby, and Grantsdale are all important centers along with the many rural areas being served by Marcus Daly Memorial Hospital. The medical staff consists of seven physicians and a full staff of paramedical personnel.

LABOR

The United States Employment Service, through the Bureau of Employment Security, furnishes assistance and guidance to state agencies in the administration and management of state employment service systems. The fiscal 1967 budget request for this program was \$22,009,000. The Congress appropriated \$1,337,000 less than the administration request, or a total of \$20,672,000. The reduction meant a loss of \$36,940 to the State of Montana.

As you know, Mr. Chairman, Montana's employment picture in recent years has not been bright. Our State Employment Service and Unemployment Compensation commission have, under normal conditions, an extremely heavy workload. This reduction of nearly \$37,000 in the budget resulted in the elimination of 4 positions which this year has caused serious problems for an already over-worked state agency. To compound matters, 3 of these lost positions directly affected the Montana State Teacher Placement Service and at a time when the workload of this department is at its peak. The department has requests for credentials and placement that can not be met and perhaps will not be met because they do not have the people to do the job.

The fiscal '68 budget request is \$961,000 less than the fiscal '67 budget request. The 1968 request is \$376,000 more than the '67 appropriation. However, the House has reduced the '68 request by \$52,000. As the appropriation came to us from the House, it is \$20,620,000 for fiscal 1968. Additional funds are needed in Montana. And the situation is the same in the other 49 states. We hope this appropriation can be restored to the level requested in fiscal 1967—\$22,009,000.

I ask, at this point, that the reports from the Secretary of Labor on this matter be included in the record.

U.S. DEPARTMENT OF LABOR,
Washington, May 8, 1967.

HON. LEE METCALF,
*U.S. Senate,
Washington, D.C.*

DEAR SENATOR METCALF: As promised, I am responding in more detail concerning the service provided by the Teacher Placement Division of the Montana State Employment Service.

As you already know, part of the problem was due to the reduction in the budget for the Montana State Employment Service. I have been advised that this is further complicated by the seasonal fluctuation of this activity and the fact that with a more restricted staff it has not been as easy as in the past to shift personnel.

I understand that the Montana agency did not indicate to its clients that it was reducing service, but did indicate that it would be necessary to establish priorities of service and perhaps there would be a greater time lag in providing service. The agency determined that it would give service first to Montana schools, to resident teachers and to those having the greatest service need. Less attention would be given to out of State requests.

The Montana State agency estimated last fall that Teacher Placement activities might have to be reduced as much as 40 percent. With the temporary arrangements made, the Agency now estimates that the reduction has been about 20 percent. This has been primarily in the form of reduced service to out of State school systems and a reduction in the number of resumes sent on each opening.

I am hopeful this additional information will be of assistance to you in connection with this matter. With best wishes.

Sincerely,

W. WILLARD WIRTZ,
Secretary of Labor.

U.S. DEPARTMENT OF LABOR,
Washington, April 10, 1967.

HON. LEE METCALF,
U.S. Senate,
Washington, D.C.

DEAR SENATOR METCALF: Thank you for your letter of March 24, expressing your interest in the services provided by the Teacher Placement Division of the Montana State Employment Service.

The reduction in the budget of the Montana State Employment Service was that State's appropriate share of an overall reduction applied to all States. This reduction resulted from action taken by the Congress on our fiscal year 1967 appropriation request. This action was taken in October 1966.

A total of five positions were eliminated from the local office operations part of the Employment Service budget of the State of Montana. Two of these positions were a specific reduction in the level of services for youth. The other three positions reduction could be applied by the State in other areas in accordance with its own determination.

We have no specific information in this office as to the considerations on the part of the State of Montana officials that guided their decision with respect to the curtailment of Teacher Placement Service activity. However, in order that these may be known, we are requesting our Regional Office to provide us with this information. That office, of course, if necessary will review the matter with the officials of the Montana State Employment Service. As soon as we receive a reply from our Regional Office we will inform you.

We deeply appreciate your interest in the activities of the Montana State Employment Service as well as our entire employment service system. Although the specific action in this case is the result of the fiscal year 1967 appropriation, we will very much appreciate your continued support during the hearings on our fiscal year 1968 appropriation request.

Sincerely,

W. WILLARD WIRTZ,
Secretary of Labor.

SUNDRY REDUCTIONS RECOMMENDED BY THE CHAMBER OF COMMERCE

Senator HILL. I shall place in the hearings a statement presented by the U.S. Chamber of Commerce for the guidance and information of the committee and the Senate.

The statement follows:

STATEMENT OF HAROLD H. HAIR,¹ FOR THE CHAMBER OF COMMERCE OF THE UNITED STATES

The Chamber of Commerce of the United States recommends that Congress reduce the 1968 budget by at least \$5 billion. A budget calling for an all-time high in Federal expenditures, and the prospects of a record peace-time deficit, estimated as high as \$29 billion, make it imperative that Congress critically review all spending programs with the aim of eliminating those that are wasteful or ineffective and curtailing or deferring the less essential ones.

This year the Chamber does not have a long list of specific recommendations. Instead, we chose to concentrate our resources on a few highly significant activities. Accordingly, we are not detailing each account we believe Congress should cut to reach the goal of \$5 billion. But, we do suggest two opportunities for prudent cuts within the purview of this Subcommittee which we would like to call to your attention. The recommended reductions are:

Office of Education.....	\$528, 800, 000
Public Health Service.....	300, 000, 000
Total	828, 800, 000

¹ Harold H. Hair is Director of the Government Operations and Expenditures Program of the Chamber of Commerce of the United States.

While citing only these two examples, we urge the Subcommittee to examine all programs funded in this bill and to trim wherever it can without harm to the national interest.

Office of Education

Budget request -----	\$4, 054, 670, 000
Recommended reduction -----	528, 800, 000

The Office of Education administers approximately 30 different programs in the field of elementary and secondary education. They form an overlapping and confusing tangle which baffles both educators and bureaucrats alike. The Chamber of Commerce of the United States asks that this problem be addressed seriously before any significant expansion of elementary and secondary education programs is allowed.

The National Chamber recommends reductions in the following Office of Education purposes:

1. Elementary and Secondary Education Act

Under Title I of the Elementary and Secondary Education Act, millions of dollars in Federal funds have gone into some of America's wealthiest school districts while leaving many of the poorest untouched. Although the Gibbons Amendment to the House authorization bill, H.R. 7819, partially closes the gap between rich and poor states in aid per pupil, the method of funding school districts continues to widen the disparity between rich and poor schools. Title I, moreover, adds an annual demand for new teachers of about 50,000 to a national demand already more than 50,000 greater than the available supply at current salary levels. In light of these facts, \$200 million should be cut from the House bill. If the Senate retains the Gibbons Amendment, the National Chamber would be willing to reconsider its recommended cut, but could in no case endorse an appropriation greater than the \$1.2 billion House figure.

The National Chamber warmly endorses the House changes in Title III administration, which we supported in letters and publications submitted to House members. We agree that the experimental character of this supplementary educational centers and services program will be enhanced by the ideas of fifty different centers of innovation rather than one small division in the Office of Education. If the Senate concurs in allowing the states to administer this program, then the House allowance of \$210 million is a justifiable one. If, however, the present Office of Education-run program is continued, whereby the states are completely bypassed, then the Title III administrative record of the Office of Education would indicate that no more than \$180 million should be appropriated for fiscal 1968.

2. "Impacted Areas" Education Act

To compensate local educational agencies for financial burdens imposed on them by Federal activities enumerated in Public Laws 815 and 874, but to prevent Federal payments from exceeding Federally-created burdens, we recommend a reduction of \$232,800,000 in the House bill.

In accordance with Public Law 88-665, and with \$200,000 appropriated for that purpose, the Secretary of Health, Education, and Welfare on November 23, 1964, contracted with the Stanford Research Institute for a thorough analysis of aid to Federally-impacted school districts under Public Laws 815 and 874. The two-volume work which resulted indicated serious overpayment to impacted areas and was, along with modifications by the Office of Education and the Bureau of the Budget, the basis of the President's fiscal year 1967 request for changes in eligibility requirements and rates of payment, and a substantially reduced appropriations. We strongly urge the Appropriations Committee to restore the integrity of these programs by voting an appropriation not in excess of \$206,337,000.

3. Teacher Corps

The National Chamber supports the sound concept of state and local responsibility for teacher recruitment, placement and supervision. For that reason, we ask that none of the \$36,000,000 requested for the National Teacher Corps be approved.

Consistent with National Chamber recommendations, the House of Representatives cut the National Teacher Corps altogether from their Supplemental Appropriations Bill as well as from their Amendments to the Elementary and Secondary Education Act of 1965 and the Labor-HEW Appropriations Bill. Although modifications introduced this year to establish greater state and local control over

Teacher Corpsmen are steps in the right direction, we cannot support a program in which public school teachers are not directly responsible to the people of the states and localities.

The need for 250,000 new teachers a year is a critical one in American education—especially in our pockets of poverty—and the one, two, or three thousand a year who are recruited by the National Teacher Corps and who decide to remain in teaching after their two-year enlistment are at least a small contribution to that need. We feel, however, that the gain is more than offset by the manner in which the teachers are provided and by the danger that the American public may assume that a quick and eye-catching Federal panacea has been found for a deep and pervasive American problem.

Should Congress act favorably upon a redesigned and decentralized Teacher Corps such as that authorized by H.R. 10943, then the National Chamber might reconsider its recommended cut in appropriation.

Both the training institutes under Title XI of the National Defense Education Act and the teacher fellowship authority under Title V, Part C of the Higher Education Act already provide substantial authority and funds for training poverty area teachers. In addition, Title V of H.R. 6232, the Higher Education Amendments of 1967, entitled "Education Professions Development," is designed "to coordinate, broaden and strengthen programs for the training and improvement of the qualifications of teachers and other educational personnel for all levels of the American educational system so as to provide a better foundation for meeting crucial needs of the Nation for personnel in these areas."

Public Health Service

Budget request.....	\$2,922,687,000
Recommended reduction.....	300,000,000

Concern was expressed in a recent study of the National Institutes of Health made by a distinguished committee of American citizens headed by Dean E. Wooldridge. The committee reported to the President that NIH has an important organizational need to strengthen its capacity for long-range planning and for determining the optimum utilization of its funds. Until this reform is accomplished, the appropriations for the NIH should be held in check to help avoid waste of funds.

The total budget estimate for the Public Health Service indicates an increase of \$315 million over the current year. The record of appropriations granted to the Public Health Service over recent years shows an average annual increase of \$250 million in new spending authority. The record also shows that over the period from fiscal year 1962 through fiscal year 1968 appropriations exceed actual expenditures by an average of almost \$500 million per year. In fact, it is estimated that in each of the fiscal years 1966, 1967 and 1968 appropriations will exceed expenditures by well over \$600 million. This constitutes a tremendous backlog of spending authority.

The backlog of funds accumulating in the Public Health Service could very well lead to grants and other expenditures for extremely low priority projects. To a great extent it diminishes Congressional control over Federal spending. Under these circumstances, an overall reduction of the Public Health Service budget of at least \$300 million should be made.

FOREIGN CURRENCY PROGRAM FOR WELFARE RESEARCH AND TRAINING

Senator HILL. I have a letter from Dr. Norman Kretchmer, professor of pediatrics, Stanford University, urging restoration of special foreign currency funds for research and training for the Children's Bureau.

(The material referred to follows:)

STANFORD UNIVERSITY SCHOOL OF MEDICINE,
STANFORD MEDICAL CENTER,
Palo Alto, Calif., June 12, 1967.

HON. LISTER HILL,
U.S. Senate, Washington, D.C.

DEAR SENATOR HILL: When I was in Washington recently it was brought to my attention that the House Appropriations Committee saw fit to remove the allo-

cated \$1,500,000 in counterpart funds from the Childrens Bureau.¹ The Childrens Bureau has been using this money for international endeavors which have been of great value to training programs in pediatrics. The claim of the House Appropriations Committee was that there was a distinct overlap between the use of funds for international endeavors by the NIH and the Office of Vocational Rehabilitation and those utilized by the Childrens Bureau. As a consequence of this conclusion, the Committee cancelled all of the international funds (P.L. 480) previously allocated to the Childrens Bureau. The Childrens Bureau has recently devised a program under the directorship of Dr. Katherine Bain for medical students to spend some time in various countries, most of which are classified as developing countries, so they might learn the problems and be capable of increasing their training experiences.

Last year while I was on sabbatical leave and was nominally attached to the Office of International Research in Paris I had an opportunity to investigate some of the projects supported by the Childrens Bureau in Poland and in Israel. I was impressed by the work of the Childrens Bureau and their choice of projects. Since I have also had experience investigating international projects for the National Institutes of Health, I can categorically state that there was no overlap between the Childrens Bureau projects and those supported by the NIH.

I believe that the removal of this small amount of money utilized for international health sciences by the Childrens Bureau was a disastrous and thoughtless decision by the House Appropriations Committee. I believe that the decision of the House Appropriations Committee still has to be ratified by the Senate and I would appeal to you to reinstate the funds to the Childrens Bureau so that they may continue to carry on their fine work.

I have been very active in many international health organizations and would be delighted to discuss these problems with you at greater length either by correspondence or in person at your convenience here in California or in Washington.

With best wishes for your continued good work.

Sincerely yours,

NORMAN KRETCHEMER, M.D., Ph. D.,
Professor and Executive Head.

EDUCATIONAL IMPROVEMENT FOR THE HANDICAPPED

Senator HILL. I shall place in the hearings the letter to me from Mr. Harold Nathan, president of the Pennsylvania Association for Retarded Children, Inc., in which he discusses the need for additional program funds for this program.

(The letter referred to follows:)

PENNSYLVANIA ASSOCIATION FOR RETARDED CHILDREN, INC.,
Harrisburg, Pa., June 14, 1967.

HON. LISTER HILL,
U.S. Senate,
Washington, D.C.

DEAR SENATOR HILL: It has come to our attention that the Senate Appropriations Sub-Committee on Departments of Labor and Health, Education and Welfare and Related Agencies will soon convene hearings for public witnesses on HR 10196.

The Pennsylvania Association for Retarded Children was delighted with the initiative shown by Congress last year in adding a new Title VI on the education of handicapped children to the Elementary and Secondary Education Act. The need for federal aid to stimulate the development of education programs for handicapped children is indisputable. Only about one-third of all handicapped children are now enrolled in the special education programs which they require

¹ *Research and training (special foreign currency program).*—The request was for \$1,500,000, the same as the amount appropriated for 1967. This program has not been nearly as successful as the similar programs under the Vocational Rehabilitation Administration and the Public Health Service. Moreover, most of the types of projects budgeted under this head could equally well be funded through the Vocational Rehabilitation or Public Health Service programs. The committee has been rather generous with the other two programs and is dropping this item from the bill with the understanding that most of the worthwhile projects that could be funded under it can be funded with the increases allowed the other two.

and to which they are rightfully entitled. However, much of the vast potential of this new program will not be realized unless adequate appropriations are enacted by Congress.

If Title VI programs are to have significant impact on improving the quality and quantity of special education services for handicapped children, the House-passed appropriation will have to be significantly increased. The Pennsylvania Association for Retarded Children, as well as the National Association for Retarded Children, urges the Senate Sub-Committee on HEW-Labor Appropriations to increase the amount available for Title VI programs to at least \$50 million.

The Report of the President's Panel on Mental Retardation (October 1962) stresses the need to develop a full range of services for mentally retarded children and adults in or near communities where clients and their families reside.

The Department of Health, Education and Welfare, in response to the President's Panel report, sponsored legislation in 1963 to assist in the construction of community facilities for the mentally retarded. The resulting program, authorized under Part C, Title I, P.L. 88-164, has induced state and local public and voluntary agencies to take the first tentative steps toward developing a network of community mental retardation facilities. However, the initial effort launched in 1963 has barely scratched the surface. Based on samples of need as indicated in four state mental retardation facilities construction plans, the National Association for Retarded Children recently calculated that the cost of constructing community facilities to provide services for all of the mentally retarded not presently receiving services or attending programs conducted in inadequate quarters would be roughly \$2.4 billion.

In view of this clear evidence of the overwhelming need for community facilities, we are extremely disappointed that the Administration's budget request and the House-passed appropriations bill includes only half (\$15 million) of the \$30 million authorized in FY 1968 for this program.

The Pennsylvania Association for Retarded Children urges the Senate Sub-Committee on HEW-Labor Appropriations to appropriate the full authorized amount (\$30 million) for Part C programs.

Sincerely yours,

HAROLD NATHAN, *President*.

PLANNING FUNDS FOR 1970 WHITE HOUSE CONFERENCE ON CHILDREN AND YOUTH

Senator HILL. I have received a letter from Mr. M. Robert Barnett, executive director of the American Foundation for the Blind, New York City, urging restoration of planning funds for the White House Conference on Children and Youth to be held in 1970.

(The material referred to follows:)

AMERICAN FOUNDATION FOR THE BLIND, INC.,
New York, N.Y., June 8, 1967.

HON. LISTER HILL,
Head, Senate Labor and Public Welfare Committee,
Senate Office Building, Washington, D.C.

DEAR SENATOR HILL: During a recent meeting of the Council of National Organizations for Children and Youth, it was brought to the attention of the membership that the proposed line item budget for the 1970 White House Conference on Children and Youth had been deleted from the overall budget of the Children's Bureau, Department of Health, Education, and Welfare. We wish to take this opportunity to express our desire for further consideration regarding funding for this very necessary conference.

The White House Conference on Children and Youth in the past has served as a planning ground to help understand the unique problems, fears, and aspirations of children and youth in the United States, but of equal importance, it has propagated a consensus of opinions, ideas and solutions attempting to meet these needs of children and youth. If the complexities of present day life continue, we can not expect children and youth to adequately confront life situations unless we as a nation are prepared to make needed information available to them.

It is interesting to note that each White House Conference since their beginning in 1909 has focused on current situations. In particular, the 1960 White

House Conference had the purpose of promoting opportunities for children and youth to realize their full potential for a creative life in freedom and dignity. Thus, recommendations were suggested that pointed up such issues as civil rights, federal aid to education, infant care, medical research, vocational training, and many other such issues. Several of the critical areas have been implemented by federal legislation, but much more information must be sought to better understand our children and youth.

We hope that the Senate Labor and Public Welfare Committee will seriously reconsider the appropriation for the 1970 White House Conference on Children and Youth.

Very sincerely yours,

M. ROBERT BARNETT, *Executive Director.*

MENTALLY RETARDED CHILDREN

Senator HILL. I have received a prepared statement from Miss Elizabeth M. Boggs, of the National Association for Retarded Children, commenting on various items within the budget estimate.

(The material referred to follows:)

STATEMENT OF ELIZABETH M. BOGGS, CHAIRMAN, GOVERNMENTAL AFFAIRS COMMITTEE, THE NATIONAL ASSOCIATION FOR RETARDED CHILDREN

INTRODUCTION

The National Association for Retarded Children is a nationwide voluntary organization dedicated to the twin goals of preventing mental retardation and ameliorating its tragic effects. We speak for the "consumers of services" who, in the case of the mentally retarded, are usually unable to speak for themselves. Our concern encompasses the mentally retarded of all ages and all degrees of disability.

Members of NARC are found in every state of the union. Although we do not have the sophisticated machinery for massive data gathering available to federal and state governments, we are in touch with the needs of the retarded in a very direct way through our network of 1100 member units.

We recognize that this Subcommittee, and Congress as a whole, faces an immense challenge in attempting to allocate fairly the restricted amount of funds available for domestic programs in FY 1968 due to the gigantic expenditures on the Vietnam conflict. Nonetheless, in our opinion, a country with the resources of the United States can and must maintain a concern for its less fortunate citizens.

Over the past decade Congress has significantly increased the amount of funds dedicated to mental retardation activities. These expenditures seem almost inconsequential when measured against the heartbreaking effects of mental retardation in millions of American families and the billions of dollars lost annually as a result of this crippling disability. Nonetheless, federal funds have had an impact out of proportion to their actual size in stimulating the development of state and local services on behalf of the mentally retarded.

It would be indeed tragic if we jeopardized the recent progress which has been made on behalf of the mentally retarded by failing to build upon the solid foundation which has been laid. Yet, our review of the President's Budget and the House's action indicates that the amounts requested for a number of mental retardation programs are gravely inadequate.

Appendix A provides an overview of funds earmarked in the HEW budget for activities related to mental retardation. We would like to call to your attention some of the most glaring deficiencies in H.R. 10196 as it relates to mental retardation programs.

TITLE VI OF THE ELEMENTARY AND SECONDARY EDUCATION ACT

Congress exhibited commendable initiative last year in adding Title VI to the Elementary and Secondary Education Act. This new Title authorized federal formula grants to support the initiation, expansion and improvement of special education programs for handicapped children.

The need for this federal assistance program is indisputable. Only about one-third of all handicapped children are now enrolled in the special education pro-

grams which they require and to which they are rightfully entitled. The House Committee on Education and Labor recognized this need in their recent report on the Elementary and Secondary Education Amendments in 1967 saying: "The committee is distressed that this critically important program to eliminate educational disadvantage has * * * not been carried out" (p. 9, H. Rept. No. 188, 90th Congress, 1st Session).

While \$154.4 million is authorized under PL 89-750, the House-passed appropriation bill (HR 10196) for FY 1968 includes only \$15.0 million for Title VI programs—the same amount requested in the President's budget. A survey of state directors of special education, conducted by the Council for Exceptional Children, provides ample evidence that state and local educational agencies are prepared to put wise use a much larger amount of federal funds.

If the enactment of Title VI is to have a significant impact on improving the quality and quantity of educational programs for handicapped children, the House appropriation for this program will have to be significantly increased. *We urge this Subcommittee to increase the amount available for Title VI programs to at least \$50 million.*

CONSTRUCTION OF FACILITIES FOR THE MENTALLY RETARDED

The Report of the President's Panel on Mental Retardation (October 1962) stresses the need to develop a full range of services for mentally retarded children and adults in or near communities where clients and their families reside and specifically calls attention to the need for the construction of new facilities—particularly day and residential facilities. The Panel recommends that "high priority * * * be given * * * to construction of facilities for day and residential care * * *" pointing to the need for over 200,000 places in such facilities (p. 141 Panel Report).

The Department of Health, Education, and Welfare, in response to the Panel's report, sponsored legislation in 1963 to assist in the construction of a variety of facilities for the mentally retarded.

During the three years this program has been in operation, communities have provided tangible evidence of their willingness to respond to federal leadership. Indicative of this grass roots interest is the amount of non-federal matching funds which have been raised for the 106 projects approved under this program as of March 1967. For these projects public and non-profit agencies at the state and local level have provided \$58.4 million, or over three times the required matching funds.

However, the initial effort launched in 1963 has barely scratched the surface. Many states have been spurred to take advantage of this program by the anticipation of increases in the token amounts allocated during the first few years of operation. Based on samples of need as indicated in four state mental retardation facilities construction plans, *NARC recently calculated that the cost of constructing community facilities to provide services for all of the mentally retarded presently denied services or attending programs conducted in inadequate quarters would be roughly 2.4 billion dollars* (see Appendix B).

In view of this clear evidence of the overwhelming need for facilities and the adverse psychological effect of unrealized program aspirations, we are extremely disappointed that the Administration's budget request and House passed appropriations bill includes only half (\$15 million) of the \$30 million authorized in FY 1968 for this program.

We urge this Subcommittee to appropriate the full authorized amount (\$30 million) for Part C programs.

STAFF AND DIRECT OPERATING FUNDS FOR THE MENTAL RETARDATION DIVISION, PUBLIC HEALTH SERVICE

In the 1966 reorganization of the Public Health Service, the former Mental Retardation Branch was upgraded to Division status and several important mental retardation programs, previously administered by other PHS agencies, were transferred to this new Division. NARC was pleased to learn of this sensible consolidation of the mental retardation responsibilities of the Public Health Service. However, as a result of the reorganization, the Division has assumed additional responsibilities without a comparable increase in staff and direct operating funds.

The total personnel complement proposed for the Mental Retardation Division in 1968 is 72¹—56 positions were carried over from the former Branch and 16 transferred with two construction programs previously administered by the Division of Hospital and Medical Facilities. This is the same number of staff members assigned to these functions during FY 1966. However, an additional nine million dollar grant-in-aid program was transferred on January 1, 1967 from NIMH to DMR without any increase in the Division's personnel complement or direct operating funds. This is the so-called Hospital Improvement (HIP) and In-Service Training Program, HIST), one of the most effective stimulus programs.

The regional office staff of the Division has proven to be most effective and should be strengthened to facilitate efficient administration of the increased responsibility which will accompany PHS decentralization and to permit improved consultation services to states and local communities.

We urge the Subcommittee to increase the personnel complement and direct operating funds for the Division to compensate for these additional responsibilities.

TRAINING TEACHERS OF HANDICAPPED CHILDREN

In his 1967 message to Congress on Health and Education, President Johnson noted that "there are now only 70,000 specially trained teachers of the handicapped—a small fraction of the number the nation requires. In the next decade, five times that number must be trained and put to work" (H. Rept. No. 68, 90th Congress, 1st Session). Yet, the Administration has requested, and the House has appropriated, the same amount (\$24.5 million) for training teachers of handicapped children as was requested and appropriated by Congress in FY 1967. This amount is \$9.5 million less than the \$34 million authorized under Section 7 of PL 85-926, as amended.

Not only is the need great but the demand for grants under this program has far exceeded the available funds. According to information issued by HEW, during "fiscal year 1967, the requests for funds under this program exceeded the Congressional appropriation by \$31,000,000 or a ratio of more than 2 to 1" (*Mental Retardation Activities of the Department of Health, Education, and Welfare*, January 1967, p. 52).

In view of these facts, NARC recommends that the full authorized amount of \$34 million be appropriated for training of teachers of the handicapped.

THE HOSPITAL IMPROVEMENT PROGRAM IN STATE MENTAL RETARDATION INSTITUTIONS

The Hospital Improvement Program has proven to be a highly effective means of stimulating the development of care and habilitation programs in state institutions for the retarded.

It was originally intended to be escalated at the rate of \$6 million annually until all state institutions had an opportunity to qualify. However, if the amount approved by the House of FY 1968 is not increased, appropriations for the HIP program will have remained almost static for three fiscal years.

This program can not be expanded to the 50 or so state mental retardation institutions which are not presently receiving grants unless FY 1968 appropriations are increased. Ironically, those institutions which need the HIP program most (i.e., the backward, custodially-oriented facilities) are not yet receiving federal funds.

NARC supports increased appropriations for this vital program of stimulus grants.

CONSTRUCTION OF VOCATIONAL REHABILITATION FACILITIES

In 1965, NARC hailed the passage of PL 89-333 as a major vehicle for accelerating rehabilitation services to the more seriously retarded. One of the major improvements included in the 1965 Amendments was provision for federal assistance in the construction of sheltered workshops and other rehabilitation facilities. The need for new facilities to house expanding rehabilitation programs is clear.

Yet the House, in accordance with the Administration's request, has appropriated less than half the authorized amount (\$9 million) for facilities construction. *We urge increased appropriations for this program.*

¹ The budget shows a total of 89 positions but 17 of these are assigned to the President's Committee on Mental Retardation, which has no operational relationship to the Division.

MANAGEMENT OF NONCATEGORICAL HEALTH PROJECT GRANTS

Last year Congress enacted PL 89-749, to consolidate the nine categorical project grant programs (including mental retardation project grants) of the Public Health Service. With the abolition of the so-called categorical grant system, funds for such projects have been merged and the administrative authority centralized in the Surgeon General's Office.

In testimony before the House Appropriations Subcommittee, the Surgeon General provided tentative estimates on the amounts of project funds which will be devoted to various health problems; however, he indicated that these amounts are subject to change depending on the health priorities established by the states and local communities. In addition, the Surgeon General announced that the authority for reviewing and approving project grant applications will be decentralized to the nine HEW regional offices.

While NARC supports efforts to strengthen state and local health agencies by increasing the flexibility of federal support programs, we also feel that the Public Health Service has a nationwide responsibility for the health of the American people which transcends the collective responsibility of state and local officials. This nationwide role encompasses the stimulation of new and underdeveloped areas of health services.

We recommend that this Subcommittee carefully follow the results of the transition to non-categorical project grants during FY 1968 to assure that: (1) project funds are allocated among the competing health interests in an equitable manner; (2) project applications related to mental retardation and other health problems are evaluated by individuals who are knowledgeable in the particular field; (3) the establishment of priorities at the regional office level takes into account the relative merits of the various health activities; and (4) valuable programs initiated with categorical funds (e.g., the Student Work, Experience and Training Program of the Mental Retardation Division) are continued and expanded.

MENTAL RETARDATION RESEARCH

A. National Institute of Neurological Diseases and Blindness

Most of the increases in the NINDB budget, as approved by the House, will be used to finance the continuation of research projects launched during previous fiscal years.

In order to meet fiscal restrictions, other Institute programs will have to remain static. In fact, unless the House figure is increased the total number of training grants offered by the Institute will have to be reduced from 591 in FY 1967 to 565 in FY 1968. In testimony before the House Subcommittee on Appropriations, Dr. James A. Shannon, Director of NIH, explained the dilemma that budgetary restrictions have placed on NINDB when he said: "We have the choice under the overall dollar ceiling to cut back on training or cut back on research. We feel we have a greater obligation to maintain the groups that are in being than to expand the training of new people * * * this judgment is taken on the basis of the hope and expectation that such type budgets will not last for an indefinite period of time." (p. 478, Part 5, House Hearings).

In view of the urgent need for increased knowledge regarding mental retardation and other neurologically-based disorders, *we urge this Subcommittee to increase appropriations for NINDB to an amount approaching the recommendation of the National Committee on Research in Neurological Disorders (\$146,000,000).*

B. National Institute of Child Health and Human Development

The total budget of NICHD is increased only 5% by the House-passed appropriations bill. As Dr. Shannon indicated in testimony before the House Appropriations Subcommittee, "you don't get much with a budget increase of five per cent * * * it means there will be no funds of a supplemental nature to carry the increased cost of grants already in existence so that those supplemental needs that result from increased costs of doing business will have to be supplied from other sources * * * from the community, from the institutions, from the hospital, or the medical school, or the scientists will do less work." (p. 636, Part 5, House Hearings).

We recommend further increases in the NICHD budget to compensate for cost of living increases and permit expansion in the Institute's vital research and training efforts.

C. Training—General

Tapering off support for the training of research scientists would be particularly inappropriate at this point in time. The bulge of so-called "war babies" are now moving into the labor market. Unless training funds are increased to compensate for the additional supply of available manpower, a great opportunity for advancing future research will be lost.

Thank you for providing us this opportunity to express our views on FY 1968 appropriations for the Departments of Labor and Health, Education, and Welfare.

APPENDIX A

Fiscal year 1968 appropriations for selected HEW programs: Comparison of authorizations with amounts in House-passed version of H.R. 10196

[In thousands of dollars]

Agency	Subject	Fiscal year 1967 appropriation (estimated)	Fiscal year 1968 authori- zation	House bill
OE-----	Title VI, ESEA ¹ -----	2,475	150,000	15,000
OE-----	Teacher education ² -----	24,500	34,000	24,500
OE-----	Research and demonstration projects in education of handicapped children.	8,100	12,000	11,100
VRA-----	Expansion of vocational rehabilitation services-----	11,091	-----	7,500
VRA-----	Construction of facilities and workshops ³ -----	4,501	9,000	3,850
PHS-MR Div	Hospital improvement program ⁴ -----	8,972	-----	8,972
PHS-MR Div	Community MR facilities ⁵ -----	14,554	30,000	15,000
PHS-MR Div	Project grants ⁶ -----	5,500	-----	5,500
PHS-MR Div	Direct operations ⁷ -----	1,633	-----	1,858
PHS-NINDB	Total budget-----	116,296	-----	128,633
PHS-NICHD	Total budget-----	64,922	-----	68,621
PHS-NIMH	Total budget ⁸ -----	263,604	-----	246,741
WA-CB-----	Maternal and child health services—earmarked for MR. ⁹	4,750	-----	4,750
WA-CB-----	Crippled Children's Services—Earmarked for MR. ⁹	3,750	-----	3,750
WA-CB-----	Training professional personnel for care of crippled children. ¹⁰	4,000	10,000	7,000

¹ For a discussion of this appropriation item see p. 2.

² For a discussion of this appropriation item see p. 5.

³ \$1,351,000 of the fiscal year 1967 appropriation was earmarked for development of State facility plans. This activity will be financed out of sec. 2 funds during fiscal year 1968; thus, when the fiscal year 1967 appropriation is adjusted for comparability, the amount requested for construction and initial staffing is increased by \$700,000 in fiscal year 1968.

⁴ For a discussion of this appropriation item see pp. 5-6.

⁵ For a discussion of this appropriation item see pp. 3-4.

⁶ For a discussion of this appropriation item see pp. 6-7.

⁷ For a discussion of this appropriation item see pp. 4-5.

⁸ When the 1967 appropriation is adjusted for comparability, the fiscal year 1968 amount represents a \$21,594,000 increase.

⁹ The amount earmarked for MR services has remained unchanged since fiscal year 1966.

¹⁰ The administration has requested that the fiscal year 1968 authorization for this program be increased to \$13,000,000 in the 1967 Social Amend. (H. R. 5710.)

APPENDIX B

Estimated cost of constructing community facilities for the mentally retarded in 4 selected States

State	Total number of mentally retarded needing service	Estimated cost of construction ¹
California.....	2 35,043	\$215,864,880
New York.....	2 36,229	223,170,640
Ohio.....	2 17,348	106,863,680
Pennsylvania.....	2 27,999	172,473,840
Total, 4 States.....	116,619	718,373,040
U.S. projected estimate.....	384,000	2,360,000,000

¹ Calculated on the basis of an average per client cost of construction of \$6,160 for all types of pt. C facilities. This figure was arrived at by dividing the total cost of the 106 pt. C projects approved as of Mar. 1, 1967, by the estimated total number of additional mentally retarded persons who will be served in these projects (\$75.2 million ÷ 12,500).

² Based on 1966-67 mental retardation construction plan.

³ Based on 1965-66 mental retardation construction plan.

FUNDS FOR VETERANS EMPLOYMENT SERVICE

SENATOR HILL. I have received a letter from Mr. Francis W. Stover, director of the National Legislative Service of the Veterans of Foreign Wars, concerning the organization's interest in the appropriations for the Veterans Employment Service. The letter will be placed in the hearings.

(The letter referred to follows:)

VETERANS OF FOREIGN WARS.
Washington, D.C., March 30, 1967.

HON. LISTER HILL,
Senate Committee on Appropriations,
U.S. Senate, Washington, D.C.

DEAR SENATOR HILL: This is to indicate the interest and support of the Veterans of Foreign Wars of the United States with respect to the \$1,801,000 which has been requested to operate the Veterans Employment Service of the Bureau of Employment Security of the Department of Labor for fiscal year 1968.

The delegates to our National Convention in New York City, who represented our 1,350,000 members, adopted several resolutions in support of adequate funds to carry out the operations of the Veterans Employment Service. Two of these resolutions are directly in point and support an adequate appropriation for the Veterans Employment Service, copies of which are attached.

As the President indicated in his historic message on veterans, which he sent to the Congress on January 31, there are approximately 94,000,000 Americans who are veterans or constitute families of veterans—almost one out of every two persons in the Nation and, as the President pointed out, his Administration has not forgotten these veterans, dependents, and survivors of veterans.

One of the most important ways veterans and their families are being remembered is through the service provided by the Veterans Employment Service. Not only is counselling and service being provided to the veterans of the Vietnam Conflict, but there are still thousands of World War II and Korean Conflict veterans who are utilizing the services of the Veterans Employment Representatives throughout the Nation from day to day.

This, therefore, is to let you know that the Veterans of Foreign Wars strongly endorses the request of the Administration for \$1,801,000 which, it is estimated, is necessary to carry out the functions of this most important service to veterans. Your favorable consideration and approval of this amount will be deeply appreciated by the membership of the Veterans of Foreign Wars of the United States.

With kind personal regards, I am,

Sincerely,

FRANCIS W. STOVER,
Director, National Legislative Service.

VETERANS EMPLOYMENT SERVICE

Senator HILL. I have received a statement from Mr. Austin E. Kerby, director of the National Economic Commission of the American Legion, presenting the views of the American Legion on that portion of the bill dealing with funds for the Veterans Employment Service.

(The statement referred to follows:)

STATEMENT OF AUSTIN E. KERBY, DIRECTOR, NATIONAL ECONOMIC COMMISSION,
THE AMERICAN LEGION

Mr. Chairman and members of the subcommittee, I appreciate this opportunity to present the views of The American Legion on that portion of H.R. 10196 dealing with the FY 1968 appropriation for the United States Department of Labor.

The American Legion has consistently supported the appropriation of adequate funds for the Department of Labor to carry on an effective employment program for veterans as well as other programs designed to improve their economic capabilities. My comments, today, however, are directed primarily to the Veterans Employment Service of the Department of Labor and its affiliated State employment services.

At its 1966 National Convention in Washington, D.C. The American Legion adopted resolutions supporting the activities of the Department of Labor relating to the economic problems of war veterans and post-Korean Conflict veterans. Our resolutions on this subject, numbered 102 and 103, are attached to my statement. I also am attaching a copy of resolution number 42 adopted by the National Executive Committee of The American Legion at its meeting of May 3-4, 1967. This resolution requests that the Secretary of Labor take necessary steps to assure that Veterans' Preference in the local public employment offices is in no way compromised by the Human Resources Development Program of the Employment Service and that veterans will continue to receive preference in the public employment offices. In addition, a brief summary of two other resolutions adopted at our 1966 National Convention is attached to my statement. These resolutions, numbered 53 and 486, support the appropriation of adequate funds for related veterans' programs within the Department of Labor. It will be appreciated if the attached resolutions and summary are included in the printed record of these hearings.

Last year Congress enacted the Veterans' Readjustment Benefits Act of 1966 which provided, among other things, job counseling and job placement services for veterans who served on active duty after January 31, 1955 and who were discharged other than dishonorably. It is estimated that approximately 3.8 million servicemen and women were separated from the Armed Services between January 31, 1955, the final date of the Korean Conflict, and March 3, 1966, the date the new "GI Bill" was enacted. According to projections of the Veterans Administration, the post-Korean Conflict veteran population will increase to some 7 million by 1972. This is based partly on Department of Defense estimates that about 600,000 veterans will be separated from the Armed Services in 1967, 750,000 in 1968, and 900,000 in 1969. It is obvious from these figures that the public employment offices will be called upon to provide a vastly increased number of veterans with employment assistance, including job counseling, referral to job openings, and referral to appropriate job training, such as training under the Manpower Development and Training Act.

The work load of the public employment offices already reflects the rapidly increasing veteran population. According to Department of Labor data, 506,000 veterans applied for job assistance at the local public employment offices during the January-March 1967 period, compared to 300,000 veteran applicants during the same period of 1966. This represents an increase of 68 percent. At the same time, there has been no corresponding increase in the number of local office veterans' employment representatives, whose mandated primary responsibilities include provision and supervision of employment services to veterans.

The House of Representatives, in passing H.R. 10196 on May 25, 1967, approved the FY 1968 budget request of \$1,801,000 for the operation of the Veterans Employment Service. In view of its current responsibilities, aside from anticipated increases in the years to come, The American Legion supports said sum

as fair and reasonable, and the minimum amount required for the operation of the Veterans Employment Service. Therefore, we respectfully request that the sum of \$1,801,000 be approved.

The American Legion also asks that additional positions of veterans' employment representatives be created in the local public employment offices, so that the Department of Labor can properly fulfill its increasing responsibilities to our veterans.

As you know, in Title IV of the Servicemen's Readjustment Act of 1944, Congress provided for "the maximum of job opportunity" for veterans through the public employment service. Both the Veterans' Readjustment Assistance Act of 1952 and the Veterans' Readjustment Benefits Act of 1966 reinforced this desire by extending special job counseling and job placement services to additional war and Cold War veterans. The American Legion is confident that this is still the strong desire of Congress.

In closing, Mr. Chairman, and members of the Subcommittee, may I again urge you to act favorably upon the budget request of the Department of Labor for those programs in that department designed to place veterans in gainful employment so that they may resume a normal life in society after service to their country.

SUMMARY OF OTHER RESOLUTIONS REFERRED TO IN STATEMENT

Veterans Reemployment Rights

1966 Convention Res. No. 53—endorses the Veterans Reemployment Rights Program and requests Congress to provide the Office of Veterans Reemployment Rights with adequate funds and personnel to enable them to give prompt and effective service to all persons having rights and obligations under the reemployment Statutes.

Employment of Older Workers

1966 Convention Res. No. 486—urges the Congress to make adequate appropriations for the required extension of specialized service for older workers in all local offices of the several state employment services and throughout other affiliated offices of the United States Employment Service, particularly through the provisions of staff time budget realistically related to the needs of the older worker.

RESOLUTIONS OF THE 48TH ANNUAL NATIONAL CONVENTION OF THE AMERICAN LEGION, WASHINGTON, D.C., AUGUST 30 TO SEPTEMBER 1, 1966

RESOLUTION NO. 102 SUPPORTING FEDERAL AND STATE VETERANS EMPLOYMENT SERVICES

Whereas, Title 38, U.S. Code (Public Law 85-857) as amended, and the Veterans Readjustment Benefits Act of 1966 (The "Cold War G.I. Bill") provide for maximum counseling and placement services for all veterans, and

Whereas, The U.S. Department of Labor, through the Bureau of Employment Security, the Veterans Employment Service, and the State Employment Services placed veterans in approximately 900,000 jobs in the calendar year 1965, including 100,650 jobs which were filled by disabled veterans, and

Whereas, This work load is being greatly increased as a result of the Veterans' Readjustment Benefits Act of 1965, which makes more than four million Cold War veterans eligible for specialized employment services through the State Employment Services of the several states, and

Whereas, The number of those veterans is expected to increase at the rate of several hundred thousand per year in the foreseeable future, and

Whereas, There will be many thousand additional veterans commonly designated as military retirees added to the number of veterans entering the civilian labor force each year during this decade, and

Whereas, Many veterans of World War II who are now in the older worker category encounter resistance in their efforts to obtain suitable employment as a result, and

Whereas, The disabled veteran finds it more and more difficult to obtain gainful employment, due to both age and disability, and

Whereas, The Manpower Development and Training Act of 1962, as amended, which provides for job training and retraining of unemployed persons, including eligible veterans, places additional responsibilities upon the State Employment Services, and

Whereas, All of the above responsibilities demand, and will continue to demand, more time, more manpower and additional funds for the U.S. Department of Labor, the Bureau of Employment Security, the Veterans Employment Service and the State Employment Services of the several states, now, therefore, be it

Resolved, by The American Legion in National Convention assembled in Washington, D.C., August 30-September 1, 1966, that The American Legion go on record as requesting the Congress to provide adequate funds for the U.S. Department of Labor, the Bureau of Employment Security, the Veterans Employment Service and the State Employment Services to adequately staff the veterans' programs and assure that the provisions of Title 38, U.S. Code, as amended, and the Veterans' Readjustment Benefits Act of 1966, are carried out as contemplated by these laws.

RESOLUTION NO. 103 FAVORING THE CREATION OF ADEQUATE LOCAL VETERAN EMPLOYMENT REPRESENTATIVE POSITIONS IN THE VARIOUS STATE EMPLOYMENT AGENCIES TO BETTER SERVE THE EMPLOYMENT NEEDS OF ALL VETERANS

Whereas, it has been the long established policy of the American Legion to promote maximum employment of all veterans, and

Whereas, The Cold War G.I. Bill, the Veterans Readjustment Benefits Act of 1966, signed into law by the President on March 3, 1966, confers veteran status to those who served in the Armed Forces from January 31, 1955 to date, and

Whereas, It extends the job counseling and placement benefits of Title 38, U.S. Code, to be provided by the Public Employment Services to the newly designated veterans who were discharged under conditions other than dishonorable, and

Whereas, There are approximately 3.8 million veterans who have been released from the Armed Forces since January 31, 1955, with an additional estimated 500,000 to 600,000 to be released annually between 1966-1970, and

Whereas, All veterans, including these newly designated veterans are to receive priority in the Public Employment Service Offices as provided for in Title 38, of the U.S. Code of Federal Regulations, and

Whereas, This priority includes selection and referral to job openings with the Public Employment Offices as well as priority and referral to training opportunities under the Manpower Development and Training Act of 1962, and

Whereas, There is a greater need for increased employment services for veterans due to the vast number of veterans who have been and will be released from the Armed Forces through 1970, now, therefore, be it

Resolved, by The American Legion in National Convention assembled in Washington, D.C., August 30-September 1, 1966, that The American Legion go on record as favoring the creation of adequate local veteran employment representative positions in the various state agencies to assist in their desire to better serve the employment needs of all veterans, and be it further.

Resolved, that The American Legion petition Congress to make adequate appropriations for the financing of these additional positions which will insure adequate employment services to the veterans of the nation through grants to the various state agencies.

RESOLUTION OF THE NATIONAL EXECUTIVE COMMITTEE MEETING OF THE AMERICAN LEGION HELD MAY 3-4, 1967

RESOLUTION NO. 42 ASSURING THAT VETERANS' PREFERENCE IS IN NO WAY COMPROMISED BY THE HUMAN RESOURCES DEVELOPMENT PROGRAM

Whereas, The Human Resources Development Program for the Disadvantaged is currently being implemented by the various State Employment Security Agencies, and

Whereas, Implementation of the Human Resources Development Program envisages certain special services to the disadvantaged; these services including outreach, improving employability, development of job opportunities, and providing job market information, and

Whereas, The American Legion is in accord with the aims and objectives of the Human Resources Development Program, provided they do not adversely affect Veterans' Preference in the public employment offices, and

Whereas, The American Legion is concerned that the mandated "maximum of job opportunity" for veterans might not be provided unless adequate measures

are taken by the Secretary of Labor and the State Employment Security Agencies to re-emphasize employment services to veterans, including war veterans and post-Korean Conflict veterans, now, therefore, be it

Resolved, by the National Executive Committee of The American Legion in regular meeting assembled in Indianapolis, Indiana, on May 3-4, 1967, that The American Legion requests that the Secretary of Labor take whatever steps may be necessary to assure that Veterans' Preference is in no way compromised by the Human Resources Development Program and that veterans will continue to receive preference in the local public employment offices, and be it further

Resolved, that the Secretary of Labor receive a copy of this resolution and that additional copies be forwarded to appropriate Congressional Committees and to any others as deemed advisable by the Chairman and Director of the Economic Commission of The American Legion.

SUBCOMMITTEE RECESS

Senator HILL. Now Dr. Mick, if you want to make a brief statement, or will you come back?

Dr. MICK. I will come back.

Senator HILL. We will be here at 2 o'clock, sir. Sorry you were delayed so. You understand our problems, don't you?

Dr. MICK. We all have problems.

Senator HILL. All right. You come back then at 2 o'clock.

We stand in recess until 2 o'clock. You come back at 2 o'clock.

(Whereupon, at 12:55 p.m., the subcommittee recessed, to reconvene at 2 p.m., the same day.)

(AFTERNOON SESSION, 2:05 P.M., MONDAY, JUNE 26, 1967)

NONDEPARTMENTAL WITNESSES

STATEMENT OF DR. ROBERT J. H. MICK, LAUREL SPRINGS, N.J.

OPPOSITION TO FLUORIDATION OF PUBLIC WATER SUPPLY

Senator HILL. Are you ready, Doctor?

Suppose you come forward. All right, sir.

Dr. MICK. May I stand?

Senator HILL. All right, sir, you think better on your feet?

Dr. MICK. Yes; I do.

Senator HILL. All right, go ahead.

Dr. MICK. Honorable Chairman, I am here, I guess, as one of the screwballs of being a good citizen. I am here then not to ask for any money—

Senator HILL. You don't want any money?

Dr. MICK. I am not even here to try to deny an appropriation. I am here today for one reason only. That before I die, that I might be able to give to you, because I have not been able to approach you either by telephone, by any other way; we two have something in common. I happen to be an original promoter of fluoridation, from 1944 until 1948. I have performed research work on animals, and I have performed research studies in Africa and the United States on people and on water, and I guess I know as much about water analysis as anyone else living.

In 1948, thanks to a fine professional man in the United States, I learned that I had willingly but unknowingly become a party to wanting to believe in fluoridation. Starting in 1948, I also started with animal research work and this work originally was not on fluorides or

fluoridation. I was interested in better breeds. We even had grains that we imported to have the finest bread for our patients and our people.

Believing that there had been experiments that had been conducted with fluorides I started to write to the U.S. Public Health Service, the American Dental Association, and so forth, and learned that there had never been a controlled experiment in the United States.

Now I happen to be the only man from New Jersey or the only man from south Jersey that attended the first meeting that took place in 1944. I am here, if I can get four major things put into the record, and for your information, and I would give that to you, also, personally, for your library, because it—if it had not been for me, Honorable Senator Hill, that piece of work would have been lost to the world forever.

They are the minutes of the finest meeting that ever took place at New York Institute of Clinical Oral Pathology on October 30, 1944, with the outstanding research men of the world, Dr. Dean, Dr. Ast, and many others that you know about.

Senator Hill, I went away from that meeting in 1944 as a convert to fluoridation. I have forgotten what I even had heard, for if you will accept this for the records as if it were read, you would be doing one of the pieces of—doing mankind one of the finest pieces in the world, because this piece is not obtainable in the world. That cost me hundreds of dollars to have made up. I have an experiment here of only a few pages, and that is comparatively only a few pages, but it is so fantastic that unless it is put into congressional records, it will be lost to the world forever.

I plead with you, not for myself, but for the people that follow me and you.

Senator HILL. All right, give it to Mr. Kennedy, there. Is it the same as here?

Dr. MICK. I would like to have that, if possible, put in. This is the excerpt, but I would like to have that. This is the full records, except for that front page, except for that one page right there. That is the excerpt and I made up an excerpt of the pages, but the whole thing should be put into the records.

Senator HILL. You leave it with us and let us examine it; will you?

Dr. MICK. Yes, I would. Is it possible that either that or the—it is a scientific piece of work. It has nothing to do with promotion of fluoridation. It is a work, as I said, of the six outstanding men in the world at that time. That is the meeting where Dr. Merrit, is it, who was—that is not the right name. He was chairman of that. He is one of the outstanding men.

Now, going from that meeting this is what, if you might remember, either as a child or your father or your grandfather, if you had a farm, these are the minerals that made your fine grasses, grains, and so forth. If you lived in Laurel Springs, N.J., we have a hundred parts per million of stuff called total solids.

You would drink this much in every 5 gallons of water, and this is how much your children drink. If you lived in Woodstown, N.J., you would drink this much in every 5 gallons.

Therefore, your children would get approximately five times as many precious body-building minerals, and in here are approximately 60 different precious body-building minerals.

When I became a convert to fluoridation the same as you were, I did not think I was wrong. When I spoke I tried to get Laurel Springs, N.J., to be the first place in New Jersey and it never occurred to me that I was infringing on anybody's rights, or that I was even wrong in fluoridation.

But I remembered the "Town Without a Toothache." This original story does not exist. This is a reprint of a beautiful article that was published in the American Dental Association's Journal and this is the front page and that was published in 1942, and then it was reprinted in Collier's in 1942, on December 19, and then it was reprinted in February 1943 in the Reader's Digest, with a different title and a different author.

From this, I became partially a convert to fluoridation, and I took out of here what I wanted, and fluoridation is promoted by the use of one sentence, and as an attorney, you know how this can happen, and it states to determine the cause of this fantastic low rate of decay peculiar to a small region in and around Hereford, Tex., research men first investigated the drinking water, which proved to contain two and a half parts fluorides per million parts of water, and the very next sentence, Honorable Senator, is left out, and this is what I forgot.

It says "but fluoride alone was not the answer." In another Texas town, with exactly the same concentration of fluorides, the decay rate, though low, was more than twice the rate of Hereford, and that was at Gatesville, Tex.

There is no story on that. Now, I was a lieutenant colonel in the Army, and it took place on a Sunday afternoon, and my friends said, "Look, Bob" and here was another title, from the same story, and this was printed 3 weeks before global fluoridation took place, printed for the Army families, and they inserted where I have that around that these findings were the same as elsewhere where fluoridation had been put in the water.

Senator HILL. What is the date of this?

Dr. MICK. May 16, 1954. Anyway, this fluoridation did not begin until 3 years after this original article and 3 years after the Public Health Service and the American Dental Association sponsored fluoridation. On this particular type of material is the way that the fluoridation was promoted on global fluoridation.

I tried to do something about it. I was informed, next to the President of the United States, as far as the military goes, that the Surgeon General's word is final, and no one can contest that which he approves of and it was his decision to have this done.

The next piece of work that is most fantastic, you have heard something about this. I would like to make you a personal present of this. This cost me approximately \$500. This is the destroyed minutes of the minutes called the proceedings of the fourth annual conference of the State dental directors with the Public Health Service and the Children's Bureau which took place on June 6 to 8, 1961, at the Federal Security Building, Washington, D.C.

These minutes are not available any place in Washington, and I, 2 months ago, came down, when I appeared. I went over to the Library of Congress. I had heard this, that they did not exist. I spent 3 hours over at the Library of Congress, and they had been taken out, and never returned.

Senator HILL. Never returned?

Dr. MICK. This is the letter from the Librarian that there is no copy at all in Washington.

Senator HILL. I notice that; yes.

Dr. MICK. Hon. Senator, this would only be a comparatively short printing. In full, if this is not put in the Congressional Record, this, too, will be lost to the world and this meeting was entitled, if you will look at the front page, it was entitled "Promotion of and Application of Water Fluoridation," and under contents. I plead with you, that this shall be put in full into the records, because it is not available at all.

Now the two things that go along with that, the two letters, the other letter, in the front you will see, I guess I have it here, the third paragraph of this, these are all efforts to try to obtain copies of these minutes.

Now the third paragraph is a letter from Congressman Cahill, July 15, 1959, in which he states with regard to your request for a copy of the proceedings of the fourth annual conference of the State dental directors with the Public Health Service, and the Children's Bureau dated June 6 to 8, 1951, I have been advised by the Health, Education, and Welfare Department that all copies of these proceedings had been destroyed.

I further checked with the Government Printing Office and they did not have a record of these proceedings. The letter from the Library of Congress will verify that as of last year.

Senator HILL. I see.

Well, how many States and cities have fluoridation now, sir?

Dr. MICK. That makes no difference as far as the States, because of the number of people. I am here to plead for scientific reports that are either destroyed or available or that have been conducted, to be put into records for posterity's sake, because I know how I wanted to do the most for the underprivileged, and I went out and did exactly the same thing, and so I have to be so careful that I am not bringing any offense, because I know the position that you have been put in, and I would like you truly—I would like to make you the most well known—fantastic is the word—I don't know if that is the right word, Senator, that has ever gone out, or that has been in our Senate, and 22 years of my life have been spent on this.

The other pieces of work that we paid for, Honorable Senator, you paid for, and I, this is work that was done by the U.S. Public Health Service, in 1950, and this has not been made available today.

At the top of that, there is a note that this was a research project of the Bureau of Medicine and Surgery, No. NN-008017 and this is one of the most fantastic pieces of work that has ever been conducted in the world by anyone, and this is a copy of that book.

The part that is the most interesting is, I attended this convention out at California, and if I had not been there, these minutes would have been lost to the world forever, and the part of the analysis of all the water and the decayed and filled teeth, and urine analysis of the individuals, this was not included in the printed text of the convention news.

Here it is, down, the year of 1967.

Senator HILL. Seventeen years ago.

Dr. MICK. That is right. This would have cost you and I, if we had done this, hundreds of thousands of dollars. It is absolutely the most wonderful work that has ever been done, and one of the last paragraphs of that particular work states that wherever, whatever their research findings were was always in comparison with the amount of minerals that were found—I will just show these to you—that were found in the water, and in the soil.

Senator HILL. Yes.

Dr. MICK. That is No. 3, and then the No. 4, these are the minerals, if you boil gallons of water, this is how much you actually drink right now. This is what keeps you alive, and what makes you what you are.

Now, when I did my own research work, I thought I had come up with something unusual, and these are the skulls of some of the animals that were drinking the fluoride water as recommended into the third generation, and I thought that I was the original man to have done this.

Senator Hill, I went back and I spent hours and hours and days at the Philadelphia Library. I looked up every word that had to do with fluoride and fluoridation, and because I just could not believe that which I had been told. Anyway, I did not go back far enough, but, when I was in the service—it is a long story, how my life has happened to be in a certain place.

I learned through Amarillo, Tex., a man who was head of the water department that there was a man by the name of Pierle. I said I don't know Dr. Pierle. I said, you don't know Dr. Pierle. He said he is the one that did all the research work with fluoride and I said, where does he live, and he said he lives in Canyon, Tex., and he was still living.

This is the work that is not shown to you or to the dentists and this is all available. It was published in July 1926 and in the ADA Journal, all with water that contained natural fluorides.

Senator HILL. 1926?

Dr. MICK. Yes. He was the guest speaker in 1925 at Louisville, Ky., at the American Dental Association Convention, and the part of this is that I only received this in the last several days. Dr. Pierle died just recently, and I was the only man to have witnessed, to take time to go down and see him, and he willed this—these slides and the work was paid for and sponsored by the research commission of the American Dental Association.

Honorable Senator, this is one of the finest rewards of my life. These were slides that were paid for by the American Dental Association. They don't even know they exist. I received these last week. Here is the letter from Mrs. Pierle, on the top of it, saying—these slides are the pictures of the article, showing the harms to the animals, the harms from natural fluoride.

I think I have the envelope to that article, the same as you have one there.

Senator HILL. Yes.

Dr. MICK. In a memorial to Dr. Chester Pierle, of Canyon, Tex., one of the finest research men we had in the United States, who did his work at West Texas Agricultural Technology College, it would be a tribute to have that work put into congressional records, if you so desire.

Now you and I, as I say, have a lot in common. The only man that saw Dr. Pierle's work and you know this, is D. H. Trendly Dean, and

Dr. Dean saw that work that Dr. Pierle was doing, and Dr. Pierle told me at that time, he said he spoke to Dr. Dean, and he said that Dr. Dean says, well, what shall we do about it?

And Dr. Dean continued he says well I guess we will have to continue on the same as we have been doing. Now coming back to the minutes of that meeting in 1951, that I hope is put in the Congressional Record, these are the things that you did not know and I did not know.

Now on the year of 1951 is absolutely fantastic, starting with April. A man had just lost two hundred some thousand dollars because of pellets that contained fluoride, and all this work was done at the Oregon Medical College, but at the same time, down at Bethesda, Md., here, there was research going on with hogs, with swine. They were trying to develop superswine, and this, as you will read the first paragraph, it says this was not a planned experiment.

And had nothing to do with fluoride or fluoridation. Anyway the animals got sick, the analysis were done by our U.S. Government, they found that the pellets contained a lot of fluoride. How did these fluorides get into these pellets?

They went back to the manufacturer, they, in turn, went to the makers of this particular source, and learned that the fluorides at the top, there, on the second paragraph.

Fluorides are used to stop the beer-making process, because they have an action to destroy enzymes that are used to activate the beer-making process. Then they have to put in other enzymes which contain the fluoride, and these are dumped out into the slops, the slops are sold as malt and mineral food to the pellet makers who in turn sell them to the animal raisers, and the last paragraph in this states that it behooves all animal raisers to learn that their source of supplemental foods contains fluorides in a toxic percentage.

Now this man, in April of 1951, the same year, within weeks of this, of the evidence being submitted by these data, by the U.S. Naval Institute, and at the same time that Dr. Taylor at the University of Texas learned of the relationship of cancer, fluoride to cancer, had been putting I learned that over a period of many years, but his first reports were in 1951 and 1952, he learned that the shortening of life was equivalent to 9 percent, where there was fluoride in the water, and even at one part per million or less.

Now all efforts were being made to nullify the work that Dr. Taylor had been doing, and as of today, the public is not told, except that this is in congressional records, is not told that this was done.

They tell you that this work has no value at all and this man has devoted his life, doing all this experimental work, it actually took in six different experimental pieces of work, involving 54 animals and I believe, over a period of time.

At the same time, let me get to this one here, this gentleman I am talking about, a Mr. Cox, had then lost hundreds of thousands of dollars, \$200,000, \$250,000, was giving of his time like I am today, had an appointment with Dr. Knudson, John Knudson who was head of the Dental Division of the U.S. Public Health Service, he on his own now, was broke, but he was going to spend the last money that he had coming to plead with Dr. Knudson of his findings, thinking he was going to be accepted with a band, and so forth, because florides were just coming into their own.

This Mr. Cox gets off the airplane, and the first thing he reads is that the U.S. Public Health Service has gone on record that there are no harms at all from fluorides and in spite of all of this work that has been done at Oregon College.

Now this is the statement by Mr. Cox of his own work that he knew that the farmers in the vicinity of a steel company near Provo, Utah, and with the aid of the Utah College doing considerable research work and almost all concerned were convinced that fluoride compounds were doing them much damage.

He learned that the Supreme Court of our land ruled many years ago that any amount of poison added to our food is too much poison. That is, it is not necessary for us to prove that a small amount of a substance is a poison, so long as we know that any amount is a poison anyway.

Now to make this short, Mr. Cox went to Dr. Knudson and Dr. Knudson told him personally that he had never performed any research work with fluorides at all.

This was in April. He then said you should go here, go there, and so forth. On the part circled on the right side are the statements of Dr. Knudson. Now you and I believe that experiments had been conducted. And I sold my soul for Dr. Ast and Dr. Knudson. Here is a letter dated August 5, 1964. That is only 3 years ago, and from the State of New York Department of Health, from Dr. David Ast, who participated in the—I will read this, if I may—who participated in the 1944 symposium in New York City that I plead to be put in, in full.

If not, the excerpts, for posterity's sake. Anyway this meeting took place, Honorable Senator, 4 months after Dr. Ast had started fluoridation in Newberg, N.Y. Then he took part in this meeting in 1951, and if you would refer to only four pages, 12-15, 19, 20, and 22, it says that they know nothing about the poisonous effects of fluorides, this is our U.S. Public Health Service, they know nothing about the toxic effects of fluorides, that they had never performed any experiments, it is on these pages, to bypass it entirely, and the worst part is, on page 22, it says to keep the people from voting on this issue.

Now these are paid employees of the State, telling the other employees how to keep the people from voting on this issue. Not that voting has anything to do with the right or wrong, but even to suggest it. Now here is where you and I got involved in this.

Now this meeting was accidentally discovered. The minutes of this were accidentally discovered in 1953. You became a willing, the same as I, a willing party to this, because you and I wanted to do the most for the underprivileged. I would not have spent so far in the last couple of months on my own, this will have cost me over \$600 in personal money, because just to come down to talk to you and the others on the committee.

I am no philanthropist either, but this I know is my last chance to say something to try to make you the most informed man in the world on this subject, if possible.

Now you were influenced by fine men, in approximately 1952, to do your best for Washington, D.C., in 1952, these were accidentally discovered, and about 10 copies of these minutes got out to the—from the U.S. Public Health Service before these minutes were destroyed by the U.S. Public Health Service.

I received a photostat of these minutes 2 weeks before the man died, Dr. James Kirwan, head of the Department of Health, the Dental Division in Passaic, N.J.

From that, then another man and myself had the plates made. This cost another \$500, in order to make these available to you and other fine legislators, so that you would know that these meetings did take place, and this tells how to use you and me and all the other fine people in this country.

Now coming back down, I said that you and I believe that experiments had been conducted. We still, and I believe you still, believe that. August 1964, a letter from the State of New York Department of Health, signed by David B. Ast, director of the bureau of dental health to a Mrs. Alice Crock, registered nurse, 409 Sheppard Avenue, Hamden, Conn, is quoted:

DEAR MRS. CROCK: I have your letter of August 3, and wish to to advise you that this department had not done any original work dealing with fluoridation as it relates to the ill or at autopsies.

Some of this work has been done in Connecticut. And I would suggest that you communicate with the Connecticut State Department of Health on this matter.

And Senator Hill, you know that you and I believe that Newberg-Kingston is being held up as the place where fluorides have been proven.

Here is then, one of the most fantastic pieces of work published by the American Medical Association, a book called, would you read that, "Archives of Environmental Health"?

Senator HILL. Archives of Environmental Health. American Medical Association publication, May 1963.

Dr. MICK. Thank you very much. In there, this is all done by doctors, showing the harms and possible harms, not only to animals, but most of it is a relationship to humans. This is only one of many, many such things, but this piece of work is denied, the dentists and the physicians as far as being published in the AMA Journal directly, it is in another district, and most of the dentists, there is not one dentist in 10,000 that even knows that that work has been done.

These are some of my own works that you know, that I have been a party to this. One is the effect on rats of artificial addition of fluorine to water. I had the honor—we had the honor, Dr. William Odin and I—of having this particular story, the consumer's story, a natural experiment with fluoridation, that was reprinted in April 1953 from the monthly newsletter journal of the American Academy of Nutrition, sent to every dentist in the United States and Hawaii by the Amorale Co., and it shows we had the privilege of seeing many, many groups that had no dental decay at all.

I had the privilege of seeing 72 that had no fillings, no crooked teeth, and my last study work that I did is at Belgrade, and at Belgrade, Florida, it is publicized as having natural fluorides. Senator Hill, you are too smart a man to be completely fooled, and this is how I was fooled.

I went over to Belgrade, and I was interested in water analysis, of which I have many, many, and I told the man he is wrong, the water analysis could not be right.

He says, you are wrong, and I said, I have examined hundreds of water analyses, but I have never seen anything like that. On one day,

the mineral content is 200 parts per billion or so and 4 days later it is up to 400 or 500 parts per billion. The fluoride content, well, we will see, this is impossible, and he says no it is not. How can you explain this?

I will tell you what. We get our source of water a mile from where the farmers dump their fertilizer, the same source of water and we can't do anything about it. We have invested thousands and thousands of dollars to get artesian wells and then it is written up that they are getting natural sources of fluorides.

You have this in common. I believe at the top, if you will read that, and if you will read those names of those towns, I can't remember them, out in there. Would you read those, right on down?

Senator HILL. Elmhurst, Maywood, Aurora, Joliet, Elgin, Evanston, Oak Park, Waukegan.

Dr. MICK. O.K.

Over on the right hand side, you will see where as the fluoride becomes less, the dental decay becomes greater. I went to my PTA's and I sold this thing. I believe it, but on two or three pages away, I learned then about water analysis, slowly I learned about water analysis, and as the total minerals and all the wonderful minerals in the water become greater, that dental decay becomes less.

And Dr. Dean's original work is all based on that, and the work that I asked there that was done on the American Island of Samoa by the Naval Division of our U.S. Public Health Service says the same thing, and they have all that frontispiece with the mineral analysis, and the booklet shows as all the bicarbonates, the calcium, the silicons, the potassiums, become less, dental decay becomes greater.

Now the original story of Reader's Digest was all written on phosphorous. It was not on fluorides at all——

Senator HILL. Phosphates?

Dr. MICK. No, no, not phosphates—on phosphorous.

Senator HILL. Phosphorous, oh.

Dr. MICK. And if the phosphorous people object at all, they should have been selling phosphorous instead of fluorides. I am going to sum this up quickly, if I can.

Senator HILL. This was 25 years ago, was it not?

Dr. MICK. Yes, it was, and that was—and I forgot about the phosphorous and about the calcium, as they say. You know, if you are a farmer from Mexico with poor cattle, you took them up to Hereford, Tex., that area, and they bred them there for a few months, and then made them marketable, because of the high mineral content of the land, and of the water. They had 600 percent more calcium phosphorous than these other places.

This is used as you recognize it, fluoride water, it is published by our U.S. Government. I don't know, I believed that autopsies and things had been done. All this is, Honorable Senator, is a book of reprints of one thing after another.

This sounds rather corny, but I would eat every page of this without water if you can find one controlled experiment that is in here that has ever been conducted with any fluoride, any recommended fluoride as the parts that are recommended as being safe and beneficial, and would cause no future body harm.

I learned that there were autopsies done, too. One on a woman, 74, on a woman 78, and on this we are asked to treat this as if these are autopsies showing the good or the bad of fluorides.

You probably—it is hard for you to believe this—but on May 13, 1960, Dr. H. Trendly Dean, in testimony revealed the major errors in and fallacies in these basic studies.

Senator HILL. Just a moment. Before whom?

Dr. MICK. Before the Chicago suit on fluoridation. Before the city of Chicago. That it revealed that it confirms in detail the charges which have been brought by scientists critical of fluoridation.

This is work, all these scientific work that is entitled to in a laboratory investigation.

Senator HILL. Excuse me 1 moment.

Dr. MICK. This book, entitled "Laboratory Investigations," should be in your library. At the top is where everything that we add to the body, of the animals, of the rat, and so forth, has a distinct characteristic. There on the top is fluoride, and you get in our work fluoride intoxication inside and not outside.

Here is something I doubt if you have ever seen. This is at Fort Royal, in the service, and here is a—

Senator HILL. What was that, during World War II?

Dr. MICK. Yes; and as a dentist, and that is where I was a lieutenant colonel, and here, you are told about the benefits of fluorides. I also have it cut down, in here, with a dental instrument, I cut the front tooth in half. You are told about the benefits of fluorides, and this is actually what takes place. The fluorides weaken the structure of the tooth. You do not get this brown staining. If you look through that front, you get brown staining only because fluoride oxidizes. Like you can take silver nitrates, and it becomes black, and fluoride becomes blacker, it does not strengthen the tooth.

Now there is a patient, a true patient, every type of fluoride that you can imagine, this is not hocus pocus and now one of the outstanding physicians that we have in the United States has done research is Dr. Roy Hanford. This is a very short article, tells about how the fluoride disturbs the metabolism of the body and the tooth structure, and that the tooth is the only completed organism that we have in the body.

For the record, that would be fine, if that were included, because there is practically no physician or dentist knows about this work, of this particular gentleman.

Senator HILL. What was the date of this, sir?

Dr. MICK. This was, I believe, last year, 1966.

Senator HILL. 1966?

Dr. MICK. Yes; I received it in 1966.

But it will explain very simply to the layman, if you were to read that alone you would know what took place in that book before you called the rat and laboratory experiments—you know the fluoride ties up the basic organism of the body. The working organism over the making organism of the body.

As a matter of interest, only, if you and I or any of our family go to one of the local institutions for a mental breakdown, or if your wife or my wife or any of our family have anything wrong, one of the most popular tranquilizers that we have in the United States is Stel-

lazine and Prolixine. This is not something that I have made up. These are also fluoride compounds, and if you go to your druggist, even tonight, and walk around there, and get the manual for the doctors, this is written up, and it will tell you what—the contraindications and so forth.

Stellazine is sold by the thousands to mental institutions, all over the United States. No matter what they say. Now these are fluoride compounds.

Now as far as relationships, I have no idea what the fluoride does to help to form this tranquilizer. All I know is that it has some reaction, it would not be in there, and two or three of those tablets will give what is supposed to be the recommended amount of the fluoride per daily dose.

As you see, I have spent practically each and every day of my life for the last 22 years, I am only interested in research work. If what I have—when I finish here—if what I have to say makes an imprint on you, I would be glad to have you at my motel in Florida.

You and your wife as a guest. I won't—

Senator HILL. You live in Florida, now?

Dr. MICK. Well, I am a resident of Florida. I own a little motel at Treasure Island. I am a dentist, and I have a dental practice in New Jersey, and one in Florida, and I commute every month.

Senator HILL. Commute back and forth?

Dr. MICK. Yes; I do. So my time is, as you can well see. I am here—

Senator HILL. Where are you in Florida?

Dr. MICK. At Treasure Island which is the St. Petersburg area. Anyway here is the many things, I would just like you to read, or I will read, but if you would read out loud the last paragraph of that page, and this is published by the American Dental Association on how to influence people and how to get fluoridation.

If you would care to read that last paragraph, I don't have another one.

Senator HILL (reading):

As such a campaign suggests, this should include a fluoridation conference at White House level, training institutions for public responsibility within the professions, Public Health Service funds to finance a campaign, more publicity on the health effects of fluoridation, communitywide, and let the truth keep up with the untruths, firm pressure on elected officials, when planned community organization down the present level, and a vigorous national campaign to benefit the many local campaigns.

Such a program will take time, money, energy and perseverance, but will insure having a victory.

Dr. MICK. On the other side, if you turn that over as I learned from the American Dental Association, on the first copy, I learned, coming back to the 1951, down about the fifth paragraph, the first paragraph refers to this meeting that was kept secret in 1951. Now on that page that you have. Right there, now down there, it says that these minutes that they did not know that the minutes of that 1951 minutes were being taken down by a stenographer.

I did not know until 10 years later. This bit of information—this is something, Senator Hill, that is truly one of the—you probably know Dr. Shorey, Nesbit Shorey, of Alabama, who is head of the dental division. I will tell you about that. Look at those numbers there. Now

Dr. Shorey, I was speaking with on the telephone yesterday, he said, yes, he is interested in the research work that I did, and I said I will start you off with the first thing that I went to, that is, and he said very well send it to me and these pages that are marked there, I put scotch tape around two sections of four pages and one section of seven pages, and these are the pages as of this minute.

Those pages are not open and Dr. Shorey would you care to read Dr. Shorey's letter to me, that is right there, that very front one, and this is the man that I tried to help in Alabama. Would you care to read that?

Senator HILL. You read it.

Dr. MICK. Okay. This is from the Department of Public Health, Montgomery, Ala., from the office of a doctor of medicine, a State health officer, and it was sent by Nesbit Shorey, D.D.S., director of the bureau of dental health. I had sent him the complete minutes of the 1944 meeting that took place in New York City.

With all the experts at that time. The letter I received back——

Senator HILL. When did you send that to him?

Dr. MICK. In November 1966. No, pardon me, October 11, 1966.

Senator HILL. Last October?

Dr. MICK. Yes. To Dr. Shorey, included is one of most important documents on the subject of fluoridation; this meeting took place 4 months after New York State's fluoridation, read each item, pay attention to index, return when finished. The letter I received back from Dr. Shorey dated December 12, 1966, Dr. Robert J. H. Mick, 14510 Eighth Avenue, Treasure Island, Fla.:

DEAR DR. MICK: If there was a prize for lifting statements out of context, I am sure you would be the undisputed winner. Your materials are being returned herewith.

Sincerely,

NESBIT L. SHOREY.

Senator Hill, if I die tomorrow, and if I get this point across, if these are put into the record, my life will receive its reward. These, I plead, this costs for the sake of the people, I have nothing to grind.

But here these minutes are destroyed. I loaned this to a man who claims to be a research man, and he did not even open the pages—they are marked four, four, and seven pages completely—and he tells me that I am the one that should be getting a prize for lifting statements out of context.

This is my reward. But this is nothing to what they did to Kennedy. And when this thing is over, I am pleading, I want to be your friend. You may not believe this. When this is over, it is going to be men like you and the other men that are going to hold the bag.

Dr. Knudson and others are going to go scott free. If they could do this to Kennedy, think what they could have done to me and what they can do to others who are contentious of this.

This was published by the American Dental Association in their bimonthly publication called the ADA Newsletter.

Senator HILL. What is the date of that?

Mr. MICK. Friday, December 1, 1961, volume 14, No. 21. Published by the American Dental Association, 222 Superior Street, Chicago, Ill.

The headlines were President Kennedy denies extremists who are antifluoridationists.

I thought what goes on, President John F. Kennedy lashed out in a November 18 speech against rightwing fanatics and he said sew the seeds of doubt and hate. Included within the indictment were extremists who are opposed to the fluoridation of water supplies. Speaking at a dinner in Los Angeles, that was for Governor Brown, Mr. Kennedy, according to the Chicago Tribune, said that the rightwingers are in this unwilling to face up to the danger from without.

They call for "Man on Horseback" because they do not trust the people. They find treason in our finest churches, in our highest court, and even in the fluoridation treatment of our water. In its coverage of the speech the Washington Post characterized the final crack of the above quote as a crack at rightwingers who say that fluoridation of water is a Communist plot to weaken the American people.

The last sentence while this was the first time the President has attacked in such specific terms the antifluoridationists, who think the Public Health Service measure is tremendous news, there has been no doubt about his feelings on fluoridation.

I wrote the President, and in time received his whole text of his speech. Then I received 20 of these things. Here is the President's talk. There is not one word in here that mentions fluoride, fluoridation, antifluoridationists, our fluoridation of water. There is not even the word Communist.

Now I started to the Attorney General, through President Kennedy, and through the FBI all my material, my correspondence went right back. Now remember, this was published in Chicago by the American Dental Association. It went back to Washington, who had no part of this. And here is a letter from the Department of Health, Education, and Welfare, dated June 8, 1962, Washington, D.C., referred to DPR-DC, Public Health Service, Bureau of State Services, Dr. Robert J. H. Mick, 915 Stone Road, Laurel Springs, N.J.:

DEAR DR. MICK: Your letter of May 22, 1962, to President Kennedy has been referred to the Public Health Service for reply. Although the words in the President's speech are slightly different from the text printed in the newsletter, the American Dental Association correctly interpreted the intent of the President's remarks.

Sincerely yours,

DONALD J. GALAGAN, D.D.S.,

Chief of the Division of Dental Public Health and Resources.

I would like to present this for posterity's sake. This is one of the most vicious things that has ever been done against any President that we have.

I have two things left, if I could repeat, state one, and the other quickly, I would like to complete with this. This is a résumé of the facts and history pertaining to my opposition to mass medication of fluoridation. I promoted fluoridation from 1944 to 1948. I have performed research studies in the fluorine belt of New Jersey.

I was an interested and international representative of the American Academy of Nutrition, and in 1949, we performed research studies in equatorial Africa on the relationship of water and food to dental decay.

As a result of these research studies in Africa, we found, No. 1, 1,600 percent more dental decay in groups living in Kisumu Kenya, drinking the same fluoride-bearing water. The percentage and type of mottling or fluorosis was approximately the same in the groups examined.

No. 2, 100-percent freedom of dental decay in various groups showing no mottling or fluorosis—decay in in various groups showing no mottling or fluorosis—72 out of 72. It was absolutely beautiful. It would only cost \$4,000 to send two men there for a year, or for a month or 2 months' research study.

That is the kind of money that should be appropriated.

No. 3, not a decay-free group where there was also the presence of fluorosis, as you see on this model.

No. 4, the percentage of malformed—and this is the most important part, these crooked teeth—the percentage of malformed dental arches, far more important than the dental decay, was increased in direct relationship to the amount of refined foods consumed, no matter what the percentage of fluorides in the water.

In other words, no miracle elements, none or unknown, that can theoretically reduce dental decay can stop a formation of so-called crooked sets of teeth and malformed dental arches and other bones of the body.

No. 5. In reverse. That well-formed dental arches are in direct proportion to the amount of total minerals, as you see here, in these little vials, in the food and water consumed by each succeeding generation.

No. 6, through research studies in the United States and Africa, that dental decay is partially controlled by the amount of minerals present in the food and water an individual consumes.

The privilege of consuming the type of food and water is the same but the personal likes and dislikes of the individuals or groups are the controlling factors.

No. 7, percentage of fluorosis can be the same. That is the staining and mottling. But decay will vary with the quality of the food consumed.

You can have a lot of fluoride in the water, Senator Hill, and if you are in a place where there are 500 to 2,000 parts per million, this type of mottling will not show up, but as was reported, you can have a hundred percent—this was reported in a Journal of Colorado Medical in 1933 by Dr. McKay, the famous Dr. McKay.

You can have 100 percent of this mottling and on this model with fluoride at one part per million or eight-tenths part per million. You only show poisonous effects of fluorides where the minerals are less in the food or in the water.

No. 8, fluorine content of different waters may be the same, but severity of a percentage of fluorosis will vary with the amount—did I say this before—with the amount of and types of other minerals also present in corresponding waters, assuming the food to be the same.

And the last, No. 9, experiments were performed with artificial fluoridation shown upon analysis of teeth, bones, kidneys, livers, and spleens that there were accumulations of up to 500 percent more fluoride in the organs of the animals consuming "safe amounts of fluoride" compared with a control or nonfluoridation group.

In completing my plea, this is only a plea that I am here, I just learned, and I am putting—asking that this be considered, that a bill, H.R. 8946 of the 90th Congress, first session, was presented in the House of Representatives on May 11, 1967, by Mr. Walter Baring, who introduced this bill, and it is cosponsored by Representative J. Delaney in H.R. 10179.

This bill has nothing to do with fluoridation. It has nothing to do with millions of dollars. I have heard hundreds of millions, or thousands of dollars to be used for research work.

The only thing that this bill mentions in its seven lines is the opposition to promotion of fluoridation by the U.S. Public Health Service and this is entitled "A bill to prohibit the expenditure of Federal funds by the Secretary of Health, Education, and Welfare to promote the fluoridation of public water supplies."

You have been most courteous.

I am tired, I am sure you are tired. I vowed so long as I live, Senator Hill, that if somebody that was in some power would be willing to listen, that I would give of my time and my money.

I am not going to go into any of the parts of the men, and all the parts that Dr. Knudson and all the others of how—you have no idea how—they are crossed between interlocking committees.

One after the other. It would take another full session. I just trust that before I die, before your term of office is over, that you will support the most bona fide hearing on fluoridation, fluorides, and or any other mineral. There are many minerals that are beneficial, that you are supporting with all the money that they want.

If you can be shown that that work is for bona fide research. That is all I ask.

Thank you very much.

Senator HILL. Dr. Mick, let me ask you a question. Have you talked recently with the Public Health Service?

Dr. MICK. Yes.

Senator HILL. Have you introduced the information?

Dr. MICK. They will not—my correspondence is so voluminous, that it sounds rather corny, but I have offered, and I will offer this through you to any charitable organization, any boys' group, or any retired group. I have offered \$20,000 to any group that can obtain just one controlled, one controlled bona fide experiment that has ever been conducted.

It doesn't even have to be conducted by the U.S. Public Health Service—but that has been conducted by the U.S. Public Health Service or the American Dental Association, or any group promoting fluoridation that shows that any of these five recommended fluoride compounds are beneficial, they are safe, and will cause no future body harm. There is no trick question. You heard. There was one man in here today. He kept pleading with you for money for experiments. Every time, I said, "Oh, if Senator Hill would only remember that word. Experiments. Experiments." Up to a hundred million dollars for experiments.

All I ask, Senator Hill, I was denied, I offered to put up part of the money. If it cost \$75,000 at the University of Miami, only \$75,000, for three-generation experiment, to be conducted by one of the outstanding pathologists in the United States, Dr. Keplinger, at the University of Miami for a research work with fluorides into the third generation. This only takes 9 months to a year.

If you could only hold up anything, and instead of appropriating as they are doing now \$59,000 more, and I received a letter stating that they are assured that they are going to get \$59,000 over the \$191,000 that they got last year, this is a very poor copy. this is my copy from Representative Cramer, in 1964, they received \$70,000.

And last year, \$191,000, and they expect to make and they are asking for \$59,000 more. But the worse part is that in that third paragraph all these activities have been funded through 1967 appropriations, dental services, and resources.

And then it says what this is to be used for, and there is nothing in there that says \$1 is to be used for controlled experiments, where they are to be conducted, and by whom. I am for all the money in the world for controlled experiments.

So anyway, if just \$75,000 could be set up, I have this planned. I have—it takes a thesis about this much, to set down, the way that this should be done, the bona fide way, and I wrote to the outstanding research people in the United States, to give me estimates on this. And Dr. Keplinger said it would cost \$75,000 to do all the analyses and so forth.

If only \$75,000 was spent by our U.S. Government, and those facts, then, delivered here at this table, and not through the Department of Health and Welfare, so that they could filter this out, then we as American citizens would receive the God's honest truth, because Dr. Keplinger said, "I have no interest in fluoridation or the outcome, or the fluorides. We will publish, we will give you a statement of our findings as they are," and this is the way that it should be.

Senator HILL. Well, now, have you talked with the Public Health Service recently about all this information you have here?

Dr. MICK. I have been in contact with them. I have asked them, even the gentleman that called me, Dr. Dieffenbach, knows of my interest in fluoride and fluoridation.

And I have been completely ignored.

Oh, one of the outstanding, two outstanding things, only for your personal interest, that so many of men brought up today, one was emphysema. Unfortunately, I happen to be a part of this emphysema, chronic bronchitis, there is nothing that you can do, except eliminate that which causes it. My many years of dust, doing dental work, and so forth, may have distributed.

However, Dr. George Walbott was the man who first wrote up the relationship of cigarettes to emphysema. Dr. George Walbott is one of the leading allergists of the world, is one of the outstanding opponents of fluoridation. He is ridiculed by the U.S. Public Health Service. He gave testimony last year with me before the House of Representatives. He is a fine man.

The other thing is, for the interest of your children, your grandchildren, or unmarried children, something came up about a harelip and a cleft palate, and thousands and thousands of dollars of research, and it came to my mind that all this fantastic work on harelip and cleft palate has been done, and it has been reported in "Keeping Livestock Healthy." It was published in 1942.

It was all done out in the University of Texas, and, Senator Hill, if on a marriage license, they only told the mother and the father that if you will only take two drops of cod liver oil a day or any other natural vitamin, olipic acids, the chances are 99½ percent that you can't have a child born with a harelip and a cleft palate, because all of this work was done on animals, and it is so exactly, Senator Hill, that if you—you are probably interested in animal research work—that if the olipic acids are deprived up to the 23d day in the gestation

period, test animals can be born with a harelip and a cleft palate, one eye, two eyes, or born blind, but if it is added up to the 22d day, they can be born normal animals.

You can take the same animals that are born blind with a harelip and cleft palate, the same parents, I mean, different breeds, different parents, and give them cod liver oil and olipic acids and they can have normal offspring. So for the sake of a few minutes for every married group, the one in 700, approximately, children that are born in the United States would not be born with a harelip and cleft palate.

Thank you. I hope that I may have the pleasure—

Senator HILL. Let me ask you this, Doctor. I take it from what you have said, you have had no official response from the Public Health Service.

Dr. MICK. That is so.

Senator HILL. Have you taken it up with the National Institute for Dental Research?

Dr. MICK. I have been interested in this, Honorable Senator, since 1948.

Senator HILL. I know that, but as I said, have you taken it up lately?

Dr. MICK. You see, as an individual. For instance, I used to teach. I graduated from Temple University in 1935, and I taught at the University of Pennsylvania. After I did my research work I went to Temple and I went to Penn. I said, "Without my name attached to this, will you rerun these experiments?" I knew nothing about Dr. Pierle's work. "Will you rerun these experiments? I will pay for them, if you wish. I will guide you, if you wish. But will you do these into the third generation?"

It costs \$50 apiece to do each piece of work at the De Layre Associates in Philadelphia, as far as analysis goes, for the fluoride contents of spleens, liver, kidneys, and so forth.

But anyway, I went to them, and they said "No." They won't do this, they are not interested. But here they are out promoting fluoridation.

I went to my dental society. We had over a thousand dollars at this point given by private fund, providing it was done by some institution, such as the University of Pennsylvania, and so forth. And they turned it down.

At Bethesda, Md., they would only take 9 months to a year to do 3 months—three generations of animal research work, that would cost them practically nothing.

Senator HILL. Well, have you talked to the head of the Institute there about this?

Dr. MICK. I don't know who the head is at the present time, but I have talked to them, I have written to them, I would do anything to help as a private individual. I am not associated now with any college. I can't get funds to redo this work.

If I could get funds, I would cooperate with any group of men, and then do these findings. The same or the best place would be done at the University of Miami, by somebody, by a pathologist, who is used to doing this work, where the results can't be said to be done by Dr. Mick, "He is an antifuoridationist."

I am not an antifuoridationist. I am after fine teeth, straight jaws for my patients. I have many, many patients whose parents lost their teeth, who have—my children, the children of these people have beautiful teeth, just by my guidance.

Senator HILL. Have you talked to anybody representing the American Dental Association lately?

Dr. MICK. They do nothing. The American Dental Association has done everything to ridicule me. They have called me everything coming down the line, from a crackpot to—I have the whole list. I didn't think you would even ask that question. There is a whole list of things that I am character-assassinated with, and this is a type of thing put out by the American Medical Association to tell how to keep the editors from publishing anything against fluoridation. How to use the PTA.

Senator HILL. It is put out by—

Dr. MICK. This is published by the American Dental Association. How to keep anyone from being heard that opposes fluoridation, and how to use any groups.

Senator Hill, I was young once, and enthused. You were a little younger. If it were not for the Jaycees, the junior chamber of commerce, and the PTA, the two young groups, male and female, of this country, plus the help of one, two, or more editors, fluoridation would never have gotten where it is today. These are the groups.

I could stand here and talk to you all day and then out comes the Jaycees, and they take a vote.

This past week, only this week, the Veterans of Foreign Wars passed a resolution at Atlantic City, N.J., to promote fluoridation, mandatory, compulsory fluoridation legislation in the State of New Jersey. And here I have spent 22 years, and they can pass a law or try to pass a law, and enforce a program to force mandatory, compulsory anything on you and me, and I hope that the word "mandatory," "compulsory," is obnoxious, no matter what it is.

Senator HILL. As you know, Dr. Seymour J. Kreshover is now Director of the National Institutes of Dental Research. He succeeded Dr. Arnold out there.

Dr. MICK. Dr. Arnold knows me personally. I have been on the same programs with Dr. Arnold.

Senator HILL. Have you talked about it to him?

Dr. MICK. He knows everything about it, and he is the one responsible for this book. In here, even before oath, twice under oath, he admitted that these statements were wrong, and then he goes ahead and has the same things put in this book called "Fluoride Drinking Water," to be accepted by fine men like you as the truth. And under oath, twice, he admitted that his material was wrong.

This is unthinkable. And now they want \$59,000 more to put four more men in the program, in order to help the States get compulsory fluoridation.

I am for anything, but what we need, if you had the same ground, it was poor ground, you can't put a seed out on the concrete road and have it grow, a tomato seed. You can't put it at the curb. You have to put it in the finest ground, with the finest minerals, and the finest fertilizers. In direct proportion to those minerals and fertilizers, the type of children, the type of soldiers, the type of offspring, the type of doctors we are going to have.

Senator HILL. Have you personally talked to Dr. Kreshover about this?

Dr. MICK. No, but if you would—if you were even to send me a letter suggesting that I would, I would, and then I don't know what can be done about it, because the moneys are appropriated and controlled by the Surgeon General, and as an individual, I can't be appropriated any money on this.

I would be willing to serve for a dollar a year, or nothing, as an adviser to you or to the U.S. Public Health Service.

Senator HILL. Have you ever talked personally to Bill Stewart, who is the Surgeon General?

Dr. MICK. The gentleman will not answer the phone. I have tried and tried. You can't approach these men.

You know that the sale of fluoride tablets for pregnant women was banned last year by Dr.—his name was mentioned—Gardner, because of adverse findings, or that the findings were not such as were stated in these recommendations.

I would talk to anybody that you might suggest, and then, as I say, I don't know what could be done. There are organizations, fluoride research organizations, not interested in fluoridation or opposing fluoridation, that if they had sufficient funds could take this project on.

But it would cost a minimum of \$75,000, if you were set up for it, and the only place I know that is set up for it is the University of Miami. This takes a fantastic operation, even for three generations. So all the money that is appropriated is used to promote fluoridation, instead of doing research work on it. But the main thing that comes back is that one that I gave you, with Dr. Ast, I suppose, is that in 1964 he stated that they had done no research work.

I have letters from the superintendent and chemist at Newburgh, N.Y., from Dr. Kinsley, that states that no experimental work had been done, or has been done at Newburgh, with or without fluoridated water.

I have another letter from a researcher that spent 2 years. He lives in Trenton, N.J.

I have a letter from a dentist in Trenton, N.J., who lived in Newburgh, N.Y., for approximately 2 years and in that letter he states that no experiments have ever been done in Newburgh.

You seem to be very interested in the mineral analysis of Kingston. You are told about Kingston and Newburgh.

Senator Hill, there is 500 percent difference in the minerals of Newburgh and Kingston.

I believe they were the same. I had the water analysis. There is 30 parts per million of calcium in Kingston, and in Newburgh there is 120 parts, and this is the same thing here. And they are saying that the waters are the same except for the fluoride content.

In New Jersey, in the fluoride belt, it should be called the mineral belt, because in direction relationship to the minerals that are in the water, you will have fine teeth, and Woodstown, N.J., has some of the most beautiful teeth this side of the Mississippi River.

So this is a beautiful story, a beautiful romantic story. Based on a hypothesis that was only a hypothesis of Dr. Dean, and Dr. Dean, I knew, was a fine, humble man, and they took out of context and took him along and named him the father of fluoridation.

He hypothesized that it could be fluoride, but he also said that it also could be minerals and then on that hypothesis, based on half truths and complete falsifications, this whole story of fluoridation was promoted. So I am not here to ask you to stop any appropriations for promotion of fluoridation. If what I have said even has a grain of sense, you in turn know what to do. I am just a small man. I feel like the illegitimate child, you know, at the family picnic.

Senator HILL. Well, we will certainly consider carefully all you have said, Doctor.

Dr. MICK. Well, you have been most courteous. In fact, you have given me more time, Senator Hill, than all of the dentists in the American Dental Association or my own dental society, at this minute.

There has never been a research experiment ever published in the American Dental Association's Journal, other than Dr. Chester Pirele's.

We assume—in my own organization, when I belonged up there in Camden, and as of today—they have never had one bona fide research man in to talk on just the experimental work, research work in fluorides.

This seems fantastic, but this is the truth.

Senator HILL. Well, we certainly will consider carefully all that you have said to us, Doctor.

Dr. MICK. Thank you.

Now, what do I do with the material that you have there, and how can I get it to you? Or what would you like to have? Because some of it, there is only one piece left like it, and I will give you that.

Senator HILL. Can you let us have it, say, for—how long are you going to be in town?

Dr. MICK. I am leaving.

Mr. DOWNEY. We will mail this to you.

Dr. MICK. Yes, Mr. Downey, if you would take anything that you want, and put it together, and mail it to me. Is there anything else here that you would wish to consider?

These are the only two I have here. If you are interested.

Senator HILL. We can get that picture all right.

Dr. MICK. Could I give you this? And put this at the top, published by the American Dental Association. That is that book that I just received from Dr. Pierle's widow, the ADA Journal.

Senator HILL. I see.

Dr. MICK. And then with that should be the letter from Dr. Pierle to me, that states that Dr. Dean has observed the work that he was doing and with the animals.

Senator HILL. We have your address.

Dr. MICK. Have you seen this?

Senator HILL. We have your address.

Dr. MICK. Would you send that to 915 Stone Road, in Laurel Springs, N.J.?

Mr. DOWNEY. That is the address I have, isn't it?

Dr. MICK. Yes. 08021 is the ZIP code.

I might state—

Senator HILL. You know Mr. Baring pretty well, do you?

Dr. MICK. I have only spoken with him. I do not know him. But he has tried to do the best on behalf of the people. As I say, this bill is not for or against fluoridation. It is for the use of money.

Senator HILL. We will certainly consider carefully all you have said, sir.

Dr. MICK. There is one thing that I missed in the remarks that I gave you. Proceedings of the Fourth Annual Conference of State Dental Directors and the Public Health Service, the only outside person—there were about 50 Public Health Service men from around the United States who attended this so-called secret meeting of the ADA and a Dr. Blackerby from the Kellogg Foundation. How he was there, I don't know but just in the last couple of months, believe this or not, the W. K. Kellogg Foundation is contributing almost \$150,000 along with almost \$150,000 by the Pan American Sanitary Bureau for a 4-year program to make South Americans want fluoridation.

On the other sheet there, believe it or not, the Bureau of Information convention or meeting of the American Dental Association is being paid for by the W. K. Kellogg Foundation. Why or how this foundation could be sponsoring money for gentlemen like Peter Folding of the ADA who wrote, disseminates this information to promote fluoridation, I have no idea, but there is the letter from the Kellogg Foundation, the Institute, saying that they based their findings on Newburgh, N.Y., and there their studies that were done, and here is that letter for 1964 from Dr. David Ast.

It states that no experiments were done. So here is about \$300,000 going to be used on South Americans to make them want fluoridation in the next 4 years. Not on research work. If the money had only been put up for research work.

I trust that the whole proceedings of the fourth annual conference would be considered to be put in in full.

Senator HILL. We have a copy.

Dr. MICK. I will give you another copy. I will give you one for your personal library. If you so desire.

Senator HILL. He will consider this carefully, Doctor.

Dr. MICK. Thank you very much.

Senator HILL. The clerk informs me that we did not get our table showing the history of appropriations for the Department of Health, Education, and Welfare printed at the proper place in our hearings. I shall place this table in the hearings at the conclusion.

(The table referred to follows :)

FOOD AND DRUG ADMINISTRATION

History of 1968 estimates

Appropriation	1967 appropriation 1	1968			Department reduction from agency request	Budget Bureau reduction from Department submission	Explanation of difference	Positions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget					
	(a)	(b)	(c)	(d)	(e)	(f)			
Salaries and expenses.....	\$51,500,000	\$96,252,000	\$82,231,000	\$66,749,000	\$14,021,000	\$15,482,000	NEW REDUCTION	(69)	(\$9,534,800)
							Medical evaluation.....	55	740,000
							Staff and related costs.....	6	60,000
							New drug evaluation.....	26	198,000
							Surveillance of marketed drugs.....	2	33,800
							Liaison and career development.....		300,000
							Clinical studies research.....		800,000
							Nonstaff costs:		555,000
							Liaison and career development, travel and training.....		80,000
							Clinical study research contracts.....		492,000
							Adverse reaction contracts.....		305,000
							Printing drug bulletins.....	(95)	(1,728,200)
							Equipment rental for automation of drug data.....	15	195,000
							Contracts for abstracting services.....	7	70,000
							Scientific research and evaluation.....	11	120,000
							Staff and related costs:	7	50,000
							Food research.....	18	108,200
							Food standards evaluation and regulatory support.....		625,000
							Laboratory services.....		500,000
							Drug research.....	(4)	(36,800)
							Administrative support.....		36,800
							Nonstaff costs:		
							Research contracts.....		
							Research equipment.....		
							Education and voluntary compliance.....		
							Staff and related costs: Industry information program.....		

Regulatory compliance-----	(332)	(4,542,300)
Staff related costs:		
Inspection of drug manufacturers and processors-----	93	1,004,100
Analysis of drug abuse control samples-----	7	76,100
Inspection of food manufacturers and processors-----	85	995,200
Inspection of imports-----	48	461,100
Pesticides regulatory programs-----	30	346,900
Inspection of manufacturers and processors of colors, cosmetics, and hazardous substances-----	17	104,100
Administrative support-----		
Nonstaff costs:	52	566,800
Scientific equipment-----		220,000
Drug analysis research contracts-----		40,000
Power files-----		100,000
Scientific meetings and workshops-----		105,000
Data automation equipment rental-----		105,000
Training for inspectors and analysts-----		275,000
Transportation of household goods-----		140,000
Executive direction and administrative support-----	(153)	(4,178,900)
Staff and related costs:		
Planning and budgeting-----	2	20,000
General services-----	58	551,100
Management systems-----	76	760,000
Personnel management and training-----	17	170,000
Nonstaff costs:		
Consultant contracts-----		276,000
Purchase of computer-----		1,000,000
Purchase of computer software-----		676,800
Establishment of an FDA technical training institute-----		725,000
Total, HEW reduction-----	636	14,021,000
BUREAU OF THE BUDGET REDUCTION		
Medical evaluation-----	(214)	(3,058,300)
Staff and related costs:		
New drug evaluation-----	59	545,600
Surveillance of marketed drugs-----	54	549,500
Liaison and career development-----	10	149,300
Clinical studies research-----	24	431,200
Monitor adverse reactions effort-----	28	230,000
Regulatory and legal support-----	6	75,000

Appropriation	1967 appropriation	1968			Department reduction from agency request	Budget Bureau reduction from Department submission	Explanation of difference	Positions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget					
							BUREAU OF THE BUDGET REDUCTION—CON.		
							Surveillance of advertising	3	\$10,000
							Literature abstracting	7	55,000
							Surveillance of devices	4	50,000
							Administrative support	24	193,700
							Nonstaff costs:		
							Adverse reaction contracts		250,000
							Printing drug bulletins		50,000
							Equipment rental for automation of drug data		108,000
							Pre-1962 drug efficacy review contract		315,000
							Scientific research and evaluation	(241)	(3,210,100)
							Staff and related costs:		
							Food research	85	1,090,100
							Food standards evaluation and regulatory support	35	357,300
							Drug research	23	287,300
							Laboratory services	27	140,900
							Pesticides research	25	300,100
							Pesticides evaluation and regulatory support	11	116,000
							Cosmetics and hazardous substances research and surveillance	9	101,400
							Administrative support	26	267,000
							Nonstaff costs:		
							Research contracts		400,000
							Research equipment		180,000
							Education and voluntary compliance	(2)	(239,900)
							Staff and related costs: Industry information program	2	20,000
							Nonstaff costs: Consumer education movies, filmstrips, literature, leaflets, and brochures		219,900
							Regulatory compliance	(458)	(5,485,100)
							Staff and related costs:		
							Inspection of drug manufacturers and processors	249	2,563,500
							Analysis of drug abuse control samples	33	342,100

Inspection of imports-----	117	1,085,600
Inspection of manufacturers and prod- ucts of colors, cosmetics, and haz- ardous substances-----	7	39,300
Liaison with State regulatory agencies. Administrative support-----	3 49	33,300 653,300
Nonstaff costs:		
Scientific equipment-----		228,000
State assistance contract program-----		510,000
Travel for State trainees-----		50,000
Drug abuse control-----	(200)	(2,373,200)
Staff and related costs:		
Drug production records accounta- bility investigations-----	101	939,800
Criminal investigations-----	60	558,000
Illegal drug counterfeiting investiga- tions-----	7	65,000
Research studies and statistics-----	2	19,000
Overtime for investigations-----		58,000
Administrative support-----	30	279,500
Nonstaff costs:		
Equipment rental and other invest- ment expenses-----		155,400
Informant fees-----		10,000
Transportation of household goods-----		62,000
Purchase of samples-----		119,500
Civil service investigations-----		107,000
Executive direction and administrative sup- port-----	(55)	(1,115,400)
Staff and related costs:		
Planning and budgeting-----	5	34,100
General services-----	19	190,000
Management systems-----	7	70,000
Personnel management and training-----	6	61,200
International affairs-----	13	129,600
Policy management-----	2	20,000
Legislative services-----	3	30,000
Nonstaff costs:		
International travel-----		10,000
Policy management travel-----		5,000
General services such as space moves, travel for monitoring the construc- tion program and the teletype system-----		212,900
Data automation equipment rental-----		52,600
FDA technical training institute-----		300,000
Total, Bureau of the Budget reduc- tion-----	1,170	15,482,000

Appropriation	1967 appropriation ¹	1968				Explanation of difference	Positions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget	Department reduction from agency request	Budget Bureau reduction from Department submission		
	(a)	(b)	(c)	(d)	(e)	(f)		
Buildings and facilities.....	\$3,130,000	\$22,000,000	\$2,200,000	\$1,150,000	\$19,800,000	\$1,050,000	NEW REDUCTION	\$15,700,000 100,000 300,000 300,000 300,000 3,400,000 19,800,000
							BUREAU OF THE BUDGET REDUCTION	1,100,000 800,000 100,000 2,000,000 +950,000 -1,050,000
							BUREAU OF THE BUDGET INCREASE (gross): Laboratory No. 2 planning.	2,000,000 +950,000 -1,050,000
							Net, Bureau of the Budget reduction.....	-1,050,000

¹ Includes proposed supplemental.

OFFICE OF EDUCATION
History of 1968 estimates

Appropriation	1967 appro- priation 1 2 (a)	1968			Department reduction from agency request (e)	Budget Bu- reau reduc- tion from Department submission (f)	Explanation of difference	Amount
		Estimate to Department (b)	Department estimate to Budget Bureau (c)	President's budget (d)				
Elementary and secondary educational activities.	\$1,464,610,000	\$3,780,462,000	\$3,315,912,000	\$1,692,000,000	\$464,550,000	\$1,623,912,000	DEPARTMENT REDUCTION Supplementary centers: Eliminate ap- proximately 2,715 nonconstruction projects and 12 construction projects. (Agency request exceeded funding level authorized under existing legis- lation.) Grants to States for guidance and coun- seling: Allows about the same im- provement in counselor-student ratio as realized in 1966-67. Strengthening State departments of edu- cation: Allowance maintains overall Federal program at about 1967 level. Allows the maximum of \$50,000 per State now authorized for improvement of State statistical services rather than the \$100,000 per State proposed. Grants to States for equipment and minor remodeling: Eliminates approx- imately 60,000 projects to acquire in- structional materials and equipment. Teacher training institutes: Eliminates proposed expansion of counseling in- stitutes to include social workers, school psychologists, and health per- sonnel. Institute participants under title XI reduced by approximately 3,000.	\$378,000,000
							Total, Department reduction ----	464,550,000

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 2785

Teacher training institutes: Reduces the number of NDEA title XI institute participants by 15,000.						14,500,000
	Total, Bureau of the Budget reduction.					1,623,912,000
	DEPARTMENT REDUCTION					
School assistance in federally affected areas.	\$439,137,000	\$476,969,000	\$466,200,000	\$439,137,000	\$10,709,000	\$27,063,000
	Maintenance and operations: Payments to local educational agencies reduced to 1967 level.					2,709,000
	Construction: Assistance to local educational agencies reduced.					8,000,000
	Total, Department reduction -----					10,709,000
National Teacher Corps -----	BUREAU OF BUDGET REDUCTION					
	Construction: Assistance to local educational agencies reduced to 1967 level.					27,063,000
	DEPARTMENT REDUCTION					
	120,000,000	50,000,000	46,000,000	36,000,000	4,000,000	4,000,000
	Eliminates continuation costs for Corps members who were to be added in 1967, but increases the number of new Corps members from 3,000 to 5,066.					
	BUREAU OF THE BUDGET REDUCTION					
	Reduction of 2,566 in number of new Corps members.					10,000,000
Higher educational activities.	DEPARTMENT REDUCTION					
	1,177,251,000	1,682,750,000	1,593,350,000	1,173,194,000	89,400,000	420,156,000
	Developing institutions: Number of cooperative arrangements reduced from 345 to 310 and number of national teaching fellowships reduced by 50 to 750.					5,000,000
	Undergraduate instructional equipment: Number of television equipment grants reduced from 330 to 250 and other equipment projects reduced from 2,400 to 1,600.					22,500,000
	Construction:					
	Public community college construction projects reduced from 239 to 220.					4,400,000
	Other undergraduate facilities construction projects reduced from 849 to 785.					15,690,000

OFFICE OF EDUCATION—Continued
History of 1968 estimates—Continued

Appropriation	1967 appro- priation 12	1968				Department reduction from agency request	Budget Bu- reau reduc- tion from Department submission	Explanation of difference	Amount
		Estimate to Department	(b)	Department estimate to Budget Bureau	(c)	President's budget	(d)	(e)	(f)
								DEPARTMENT REDUCTION—CON.	
								Teacher programs: Reduction in new elementary and secondary teacher fellowships from 14,700 to 10,000. Work-study programs: Allows only 17,875 of the additional 41,000 jobs proposed.	\$39,000,000 48,300,000
								Total, Department reduction-----	134,800,000
								DEPARTMENT ADDITION	
								National defense loans: Increase raises number of students aided from 425,000 and \$153,000,000 to 450,000 and \$198,400,000; and increases average loan from \$510 to \$585 per student. The number of students aided is based on total funds available for loans including institution contributions, cash collections, and prior year carryover.	+45,400,000
								BUREAU OF THE BUDGET REDUCTION	
								Developing institutions: Reduction decreases the proposed number of cooperative programs supported from 310 to 185 and decreases national teaching fellowships proposed from 750 to 500.	20,000,000
								Undergraduate instructional equipment: Reduction decreases number of television grants from 250 to 150 and decreases other equipment grants from 1,600 to 800.	33,000,000

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Construction: Reduction in public community college construction projects from 220 to 108.	18, 100, 000
Reduction in graduate facilities program decreases number of projects from 150 to 80.	40, 000, 000
Reduction in other undergraduate facilities program from 785 projects to 675.	81, 900, 000
Reduction in technical services program to 1967 level.	51, 256, 000
Teacher programs: Reduction in elementary and secondary teacher fellowship program from 10,000 new fellowships to 3,215.	5, 500, 000
College teacher fellowships: Eliminates 1,162 fellowships.	10, 700, 000
Institutes in use of equipment: Reduction in program to 1967 level.	2, 500, 000
Student aid:	24, 400, 000
Reduction in educational opportunity grants program provides for continuation costs for 164,000 recipients and reduces new grants from 148,000 to 121,000.	
Reduction in number of national defense loans from 450,000 to 437,000. Maintains 1967 program level.	5, 000, 000
Insured loan program reduced by eliminating advances for reserve funds and decreasing interest payments from \$94,100,000 to \$40,000,000. The number of interest payments are reduced from 2,967,000 to 750,000.	96, 100, 000
Work-study program participants reduced from 236,000 to 215,000 for the winter and spring terms and from 279,000 to 226,000 for the summer and fall terms.	31, 700, 000
Total, Bureau of the Budget reduction	420, 156, 000

BUREAU OF BUDGET REDUCTION					
Educational Improvement for the handicapped.	1 37,900,000	108,000,000	101,000,000	53,400,000	7,000,000
Library services:					
Reduces number of librarians to be employed from 1,100 to 1,050; reduces the number of bookmobiles to be purchased from 150 to 115; and reduces the number of books to be purchased by 500,000 to about 8,000,000.					
Reduction in interlibrary cooperation program allows cooperative projects to be less comprehensive than planned.					
Reduction in specialized State library services program reduces the number of books to be purchased and personnel to be trained to work with the physically handicapped by about $\frac{1}{4}$.					
Construction of public libraries: Reduction in library construction projects from 500 to 340.					
College library resources: Reduces the number of grants from 5,850 to 3,150.					
Library of Congress: Reduction in cataloging allows somewhat reduced acquisition of materials.					
University community service programs: Reduces number of projects from 1,500 to 1,000.					
Adult basic education: Results in a cut of over 150,000 participants in regular school programs.					
Total Bureau of the Budget reduction.					
DEPARTMENT REDUCTION					
Reduction in teacher education programs reduces by 400 the total number of individuals trained in full-year and summer programs.					
Reduction in research and demonstration projects from 340 to 250.					
Total Department reduction-----					
5,000,000					
2,625,000					
4,060,000					
17,815,000					
25,000,000					
3,770,000					
13,500,000					
14,300,000					
86,070,000					
1,000,000					
6,000,000					
7,000,000					

OFFICE OF EDUCATION—Continued
History of 1968 estimates—Continued

Appropriation	1967 appro- priation 1:	1968				Department reduction from agency request	Budget Bu- reau reduc- tion from Department submission	Explanation of difference	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget	(b)	(c)	(d)	(e)	(f)
	(a)	(b)	(c)	(d)					
								BUREAU OF THE BUDGET REDUCTION	\$35,000,000
								Reduction in preschool and school pro- grams reduces number of handicapped children to be helped from 330,000 to 100,000.	
								Reduction in teacher education reduces by 4,770 the total number of individ- uals trained in full-year and summer programs.	9,500,000
								Reduction in research and demonstra- tion projects from 230 to 225.	900,000
								Reduction in captioned films program to 1967 level.	2,200,000
								Total Bureau of the Budget re- duction.	47,600,000
								DEPARTMENT REDUCTION	
								Reduction provides lower level of in- crease for 20 existing educational lab- oratories and 9 existing research and development centers.	33,000,000
								Reduction in laboratories construction program because of slow start.	2,400,000
								Project research.	
								Reduction in general education re- search allows for smaller expan- sion of the program.	25,000,000
								Reduction in demonstration and development activities curtails by about 50 percent the planned expansion in curriculum develop- ment, hardware development, and demonstration institutions and programs.	34,000,000
Research and training. ----	\$91,050,000	\$298,500,000	\$199,100,000	\$99,900,000		\$99,400,000	\$99,200,000		

OFFICE OF EDUCATION—Continued
History of 1968 estimates—Continued

Appropriation	1967 appropriation	1968				Department reduction from agency request	Budget Bureau reduction from Department submission	Explanation of difference	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget	(c)	(d)	(e)	(f)	
		(a)	(b)	(c)	(d)	(e)	(f)		
								BUREAU OF THE BUDGET REDUCTION	
								Office of the Commissioner.....	\$150,000
								National Center for Educational Statistics.....	540,000
								Office of Field Services.....	+2,772,500
								Administrative and contractual services.....	180,000
								Bureau of Elementary and Secondary Education.....	1,090,000
								Bureau of Adult and Vocational Education.....	510,000
								Bureau of Higher Education.....	740,000
								Bureau of Research.....	690,000
								Subtotal.....	1,127,500
								Studies and contracts.....	2,364,800
								Adjustment in 1967 base due to reductions in appropriation act.....	3,490,700
								Total, BOB reduction.....	6,983,000
								DEPARTMENT REDUCTION	
Higher education loan fund: New obligatory authority loans.	\$200,000,000	\$200,000,000	\$100,000,000				\$100,000,000	Lending level reduced by \$100,000,000. Department allowance maintains anticipated 1967 loan level of \$200,000,000. Loans in 1968 to be financed from \$100,000,000 carryover of appropriated funds from 1967 (reducing 1967 level from \$300,000,000 to \$200,000,000) and \$100,000,000 in new obligatory authority.	200,000,000

	(100,000,000)	(100,000,000)	(100,000,000)	(100,000,000)	(\$200,000,000)	(100,000,000)	----- (+100,000,000)		BUREAU OF THE BUDGET REDUCTION Reduction of \$100,000,000 in new obligational authority is offset by increase in funds from participation sales. BUREAU OF THE BUDGET REDUCTION Increase of \$100,000,000 in participation sales offsets comparable reduction in request for new obligational authority. Total lending level for 1968 maintained at \$200,000,000, same as Department allowance and 1967 program level.	(+100,000,000)
Loan funds from participation sales and unobligated balance.	(300,000,000) 639,000	(300,000,000) 3,200,000	(300,000,000) 3,200,000	(200,000,000) 3,200,000	(200,000,000) 2,625,000	(100,000,000)	----- 575,000		Reduction of \$575,000 for participation sales insufficiencies (principally interest subsidization) reflects more recent estimate of requirements.	575,000
Total loan level----- Interest subsidization, new obligational authority.										

¹ Includes proposed supplementals.

² Includes proposed pay supplemental.

³ The 1967 appropriations have been adjusted to reflect comparability with the 1968 estimates which are on a new appropriation basis.

VOCATIONAL REHABILITATION ADMINISTRATION
History of 1968 estimates

Appropriation	1967 appro- priation ¹ (a)	1968			Department reduction from agency request (e)	Budget Bureau reduction from Department submission (f)	Explanation of difference	Amount
		Estimate to Department (b)	Department estimate to Budget Bureau (c)	President's budget (d)				
Grants for rehabilitation services and facilities.	\$259,060,000	\$338,000,000	\$324,000,000	\$311,550,000	\$14,000,000	\$12,250,000	DEPARTMENT REDUCTION Vocational Rehabilitation Services: Reduced basic support program for matching State funds.	\$140,000,00
							BUREAU OF BUDGET REDUCTION	
							Innovation in rehabilitation services-----	1,800,000
							Construction of facilities and workshops-----	5,150,000
							Expansion of vocational rehabilitation services-----	1,500,000
Research and training-----	60,325,000	80,984,000	76,228,000	65,484,000	4,756,000	10,744,000	Workshop improvement activities-----	1,600,000
							Total Bureau of Budget reduction-----	4,000,000
								12,450,000
							DEPARTMENT REDUCTION	
							Research: Did not allow request of 104 new research projects Training: Reduced request by 256 short-term traineeships.	4,756,00 50,000
							DEPARTMENT INCREASE Provides for national study of rehabilitation needs.	+50,000
							Total, Department reduction-----	4,756,000
							BUREAU OF BUDGET REDUCTION	
							Research: Reduced by 60 newly requested research projects.	2,728,000
							Training: Reduced request of 165 long-term teaching grants, 638 long-term traineeships.	7,216,000

	3,000,000	5,000,000	5,000,000	5,000,000				Special centers: Reduced request by 4 new centers, 1 medical, 1 neuropsychiatric, 1 blind, and 1 epileptic. International research (domestic support)	700,000
Research and training (special foreign currency program). Correctional rehabilitation study.	800,000	800,000	800,000	800,000				Total, Bureau of Budget reduction	100,000
									10,744,000
								DEPARTMENT REDUCTION	
Salaries and expenses..... Transfer from trust funds.	4,860,000 (299,000)	0,653,000 (336,000)	6,558,000 (336,000)	5,621,000 (336,000)	105,000	937,000		Reduced request for 8 new positions and related costs: 5 positions and \$55,000 from program services, 3 positions and \$40,000 from research and training.	105,000
								BUREAU OF BUDGET REDUCTION	
								Reduced request for 46 new positions (14 from program services, 9 from regional operations, 11 from research and training, and 12 from management services and executive direction and program coordination) and related costs of \$487,000. Other reductions include \$50,000 for technical assistance to workshops, \$100,000 for data processing expenses of the Data Information Center, and \$300,000 for the intramural research program.	937,000
								Total reduction.....	
Total, Vocational Rehabilitation Administration.	328,054,000	431,447,000	412,586,000	388,455,000	18,861,000	24,131,000			1,042,000

1 Includes proposed supplementals.

PUBLIC HEALTH SERVICE

History of 1968 estimates

Appropriation	1967 appropriation	1968			Department reduction from agency request	Budget Bureau reduction from Department submission	Explanation of difference	Positions	Amount
		(a)	(b)	(c)	(d)				
Health manpower-----	\$209,746,000	\$437,210,000	\$435,810,000	\$373,413,000	\$1,400,000	\$62,397,000			
Disease prevention and environmental control.	181,237,000	270,689,000	238,939,000	222,680,000	11,750,000	36,259,000			
Health services exclusive of Indian health programs.	404,498,000	508,314,000	500,910,000	440,731,000	7,404,000	60,179,000			
National Institutes of Health.	1,111,573,000	1,517,955,000	1,409,111,000	1,187,250,000	108,844,000	221,861,000			
National Institute of Mental Health.	307,728,000	410,278,000	377,452,000	346,909,000	32,826,000	30,543,000			
Other Public Health Service.	199,900,000	338,961,000	287,306,000	226,435,000	81,655,000	30,871,000			
Total (exclusive of Indian health programs)-----	2,514,682,000	3,483,407,000	3,239,528,000	2,797,418,000	243,879,000	442,110,000			
Indian health programs.	90,813,000	117,670,000	117,041,000	104,344,000	629,000	12,697,000			
Total, Public Health Service.	2,605,495,000	3,601,077,000	3,356,569,000	2,901,762,000	244,508,000	454,807,000			
Health manpower education and utilization.	149,746,000	218,210,000	216,810,000	170,413,000	1,400,000	46,397,000	Dental research grants.		\$400,000
							Grants to diploma schools of nursing.		1,000,000
							Subtotal.		1,400,000
							BUREAU OF THE BUDGET REDUCTIONS		
							Physician manpower: Research grants.		447,000
							Direct operations:		
							Construction activities.	30	503,000
							Continuing education activities.	6	349,000
							Health manpower activities.	16	443,000

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Dental:		
Grants:		
Research.....		147,000
Fellowships.....		50,000
Research training.....		100,000
Continuing education.....		1,300,000
Direct operations:		
Disease prevention and control.....	1	22,000
Dental care administration.....	5	57,000
Manpower supply and utilization.....	1	51,000
Dental health center.....	7	172,000
Research and development in dental technology.....		18,000
Nursing:		
Grants:		
Fellowships.....		87,000
Traineeships.....		1,000,000
Research training.....		344,000
Grants to diploma schools.....		3,000,000
Direct operations:		
General consultation.....	15	246,000
Nursing practices.....	7	163,000
Nursing education and training.....	5	217,000
Manpower resources.....	21	193,000
Communication of health knowledge.....	10	163,000
Recruitment contracts.....	2	28,000
Administration of grants.....	6	106,000
Allied health professions manpower:		
Direct operations:		
Health manpower activities.....	7	313,000
Programming of current grant programs of public health traineeships and educational improvement grants.....	5	53,000
Programming, technical coordination, and administration of new allied health grant programs.....	39	685,000
Health manpower educational services:		
Grants:		
Public health traineeships.....		2,000,000
Schools of public health.....		1,500,000
Graduate public health training.....		2,500,000
Health professions educational improvement.....		2,500,000
Allied health professions.....		5,500,000
Student loans.....		21,300,000

Public Health Service—Continued
History of 1968 estimate—Continued

Appropriation	1967 agency proportion	1968			Department reduction from agency request	Budget reduction from the department suballocation	Explanation of difference	Fiscal year	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget					
	(a)	(b)	(c)	(d)					
							BUREAU OF THE BUDGET REDUCTIONS—CON.		
							Direct appropriations—Con.	14	\$217,000
							Unallocated	28	701,000
							Unrecovered disbursements		
							Penalties:		
							Community standards	16	2,087,000
							Intelligence/state services	7	446,000
							Reproduction	13	346,000
							Research and development	35	455,000
							Technical services	19	232,000
							Subtotal	80	3,204,000
							Foreign quarantine	42	701,000
							Subtotal	122	3,905,000
							Total reductions	312	10,040,000
							DEPARTMENT REDUCTIONS		
							Research	112	2,777,000
							Administration	116	2,880,000
							Technical services	72	1,800,000
							Training	20	500,000
							Subtotal	220	7,957,000
							BUREAU OF THE BUDGET REDUCTIONS		
							Research	26	650,000
							Administration	44	1,100,000
							Technical services	34	850,000

AB reduction

PUBLIC HEALTH SERVICE—Continued
History of 1968 estimates—Continued

Appropriation	1967 appropriation 1	1968				Department reduction from agency request	Budget Bureau reduction from Department submission	Explanation of difference	Positions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget	(d)					
	(a)	(b)	(c)	(d)						
Radiological health.....	\$15,895,000	\$19,279,000	\$17,641,000	\$15,087,000	\$1,638,000	\$1,954,000	DEPARTMENT REDUCTIONS Research grants..... Direct operations: Effects of radiation on man..... Training..... Measurement and surveillance..... Subtotal.....	6 5 7 18	\$500,000 133,000 755,000 250,000 1,638,000	
							BUREAU OF THE BUDGET REDUCTIONS Research grants..... Direct operations: Effects of radiation on man..... Development of methodology for radiation exposure reduction..... Technical assistance..... Subtotal..... Total reductions.....	8 17 10 35 53	172,000 296,000 775,000 711,000 1,954,000 3,592,000	
							DEPARTMENT REDUCTIONS Medical care administration and community health: Grants: Research..... Research training..... Direct operations: Multiphasic screening 2..... Adult health protection..... Physical fitness program.....	4 10 2	2,806,000 550,000 1,110,000 1,979,000 270,000	
Community health services.....	64,134,000	104,266,000	98,148,000	68,523,000	6,118,000	29,625,000				

Mental retardation, direct operations: President's Committee on Mental Retardation.						+17	+587,000
Subtotal						+1	6,118,000
BUREAU OF THE BUDGET REDUCTIONS							
Medical care administration and community health:							
Grants:							
Research:							
Fellowships							1,722,000
Research training							400,000
Direct operations:							800,000
Health insurance						46	1,191,000
Standards and methods						19	933,000
Nursing home services						13	446,000
Home health services						9	401,000
Adult health protection						6	846,000
State and urban health services						33	1,293,000
Health communications						7	344,000
Health services for migrant workers.						5	80,000
Rural health.						8	177,000
Family planning services							4,000
Mental retardation:							
Grants: Research							74,000
Construction:							
University affiliated facilities							5,000,000
Community services facilities							15,000,000
Direct operations:						5	505,000
Data analysis and utilization						31	400,000
Division staff							
Subtotal						182	29,625,000
Total reductions						181	35,743,000
DEPARTMENT REDUCTIONS							
Model nursing units.						54	900,000
Improvement of training program.						11	191,000
Headquarters staff						12	195,000
Subtotal						77	1,286,000
Hospitals and medical care	57,045,000	75,213,000	73,927,000	63,851,000	1,286,000	10,076,000	

PUBLIC HEALTH SERVICE—Continued
History of 1968 estimates—Continued

Appropriation	1967 appro- priation ¹	1968				Explanation of difference	Posi- tions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget	Department reduction from agency request			
	(a)	(b)	(c)	(d)				
						BUREAU OF THE BUDGET REDUCTIONS		
						Inpatient-outpatient care:	25	\$322,000
						Staffing related to lower estimated		
						patient loads.	21	193,000
						Preventive medicine.	32	564,000
						Personalized health services project.		
						Emergency medical services:		
						Surveys.	2	800,000
						Training.	8	935,000
						Demonstrations.	2	655,000
						Program assistance.	6	790,000
						Research.	3	780,000
						General nontraffic.	19	468,000
						Poison control.	4	184,000
						Bureau of Health Services manage- ment fund.		315,000
						Other inpatient and outpatient care.	59	1,568,000
						Coast Guard medical services.	14	216,000
						Federal employee occupational health and safety.	18	286,000
						Subtotal.	213	10,076,000
						Total reductions.	290	11,362,000
Hospital construction activities.	\$283,319,000	\$428,835,000	\$428,835,000	\$303,357,000	0	Construction and operation of demon- stration health facilities.		
						Operations and technical services.	35	473,000
						Total reductions.	35	20,473,000
NATIONAL INSTITUTES OF HEALTH ⁴								
Biologics standards.	8,709,000	9,280,000	9,280,000	8,649,000	0	Biologics standards.	24	631,000

PUBLIC HEALTH SERVICE—Continued
History of 1968 estimates—Continued

Appropriation	1967 appropriation	1968				Department reduction from agency request	Budget Bureau reduction from Department submission	Explanation of difference	Positions	Amount
		(a)	(b)	(c)	(d)					
								BUREAU OF THE BUDGET REDUCTIONS		
								Grants:		\$13,850,000
								Research.....		705,000
								Training.....		
								Subtotal grants.....		14,555,000
								Direct operations:	6	118,000
								Laboratory and clinical research.....		
								Collaborative research and development.	6	7,432,000
								Bionometry, epidemiology, and field studies.		
								Training.....		+1,000
								Review and approval of grants.....	5	320,000
								Program direction.....		7,000
								Subtotal.....	17	22,431,000
								Total reductions.....	32	26,842,000
								DEPARTMENT REDUCTIONS		
								Grants: Research.....		73,000
								Direct operations:	1	118,000
								Laboratory and clinical research.....	1	340,000
								Collaborative research and development.		240,000
								Review and approval of grants.....	1	34,000
								Program direction.....		+3,000
								Subtotal.....	3	462,000
National Institute of Dental Research.	\$28,447,000		\$32,388,000	\$31,928,000	\$30,307,000	\$462,000	\$1,619,000			

National Institute of Arthritis and Metabolic Diseases.	BUREAU OF THE BUDGET REDUCTIONS				
	Grants:				
	Research				1,220,000
	Training				191,000
	Subtotal, grants				1,411,000
	Direct operations:				
	Laboratory and clinical research			4	90,000
	Collaborative research and development			1	111,000
	Biometry, epidemiology, and field studies				30,000
	Review and approval of grants			1	1,000
	Program direction				+24,000
	Subtotal			6	1,619,000
	Total reductions			9	2,081,000
	DEPARTMENT REDUCTIONS				
	Grants: Research				4,157,000
	Direct operations:				
	Laboratory and clinical research	9,203,000		2	208,000
	Collaborative research and development	3,732,000		2	+769,000
	Biometry, epidemiology, and field studies			5	90,000
	Review and approval of grants			2	36,000
	Program direction				
	Subtotal			11	3,732,000
	BUREAU OF THE BUDGET REDUCTIONS				
	Grants:				
	Research				7,110,000
	Training				2,294,000
	Subtotal, grants				9,404,000

BUREAU OF THE BUDGET REDUCTIONS					
Grants:	Research.....				4,638,000
	Training.....				397,000
	Subtotal, grants.....				5,035,000
	Direct operations:				
	Laboratory and clinical research.....			19	313,000
}	Collaborative research and develop-			7	228,000
	ment.....				
	Biometry, epidemiology, and field studies.....			3	135,000
	Review and approval of grants.....				15,000
	Program direction.....				
	Subtotal.....			29	5,726,000
	Total reductions.....			57	5,907,000
DEPARTMENT REDUCTIONS					
Grants:	Research.....	1,664,000			577,000
	Direct operations:				
	Laboratory and clinical research.....			3	322,000
	Collaborative research and develop-				+329,000
	ment.....				
	Biometry, epidemiology, and field studies.....				31,000
	Review and approval of grants.....			1	+17,000
	Program direction.....				+2,000
	Subtotal.....			4	582,000
BUREAU OF THE BUDGET REDUCTIONS					
Grants:	Research.....				322,000
	Training.....				399,000
	Subtotal, grants.....				721,000
	Direct operations:				
	Laboratory and clinical research.....			10	461,000
}	Collaborative research and develop-			4	444,000
	ment.....				
	Biometry, epidemiology, and field studies.....				46,000
	Review and approval of grants.....			1	+8,000
	Subtotal.....			15	1,004,000
	Total reductions.....			19	2,240,000

National Institute of Allergy and Infectious Diseases.

National Institute of Child Health and Human Development.	67,053,000	80,292,000	76,211,000	68,621,000	4,081,000	7,590,000	Grants: Research.....	DEPARTMENT REDUCTIONS	2,979,000
							Direct operations:.....		814,000
							Laboratory and clinical research.....	58	58,000
							Collaborative research and development.	21	68,000
							Biometry, epidemiology, and field studies.		116,000
							Review and approval of grants.	13	46,000
							Program direction.....	3	4,081,000
							Subtotal.....	95	
							BUREAU OF THE BUDGET REDUCTIONS		
							Grants:		
							Research.....		5,264,000
							Training.....		387,000
							Subtotal, grants.....		5,651,000
							Direct operations:		
							Laboratory and clinical research.....	48	1,866,000
							Collaborative research and development.	15	+282,000
							Biometry, epidemiology, and field studies.		147,000
							Training.....		36,000
							Review and approval of grants.	4	151,000
							Program direction.....	3	21,000
							Subtotal.....	70	7,590,000
							Total reductions.....	165	11,671,000
							DEPARTMENT REDUCTIONS		
							Grants: Regional medical programs.....		62,000,000
							Direct operations:		
							Professional and technical assistance.....	7	6,000
							Review and approval of grants.	14	154,000
							Program direction.....	3	39,000
							Subtotal.....	24	62,199,000
Regional medical programs..	45,360,000	202,799,000	140,600,000	64,314,000	62,199,000	76,256,000			

PUBLIC HEALTH SERVICE—Continued
History of 1968 estimates—Continued

Appropriation	1967 appropriation (a)	1968				Explanation of difference	Positions	Amount
		Estimate to Department (b)	Department estimate to Budget Bureau (c)	President's Budget (d)	Department reduction from agency request			
Environmental health sciences.						BUREAU OF THE BUDGET REDUCTIONS		
						Grants: Regional medical programs.....		\$75,600,000
						Direct operations: Professional and technical assistance.....	14	581,000
						Review and approval of grants.....	6	73,000
						Program direction.....	3	32,000
						Subtotal.....	23	76,286,000
						Total reductions.....	47	138,485,000
						DEPARTMENT REDUCTIONS		
						Grants: Research.....		1,821,000
						Direct operations: Laboratory and clinical research.....		4,078,000
						Review and approval of grants.....		66,000
						Program direction.....		100,000
						Subtotal.....		6,065,000
						BUREAU OF THE BUDGET REDUCTIONS		
						Direct operations: Laboratory and clinical research.....	38	1,379,00
						Program direction.....	4	
						Subtotal.....	42	1,379,000
						Total reductions.....	42	7,444,000
	\$13,407,000	\$28,059,000	\$21,094,000	\$20,615,000	\$6,065,000			

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 2813

DEPARTMENT REDUCTIONS				
General research and services -	Division of Research Facilities and Resources:			
	Research grants	17,429,000		1,484,000
	Direct operations:			
	Collaborative research and development			108,000
	Review and approval of grants			20
	Program direction			+1
	Office of International Research:			
	Research grants			225,000
	Direct operations:			
	International research			905,000
	Training activities			+1,000
	Division of Computer Research and Technology:			
	Direct operations			11
	Subtotal			8,000
				30
				2,981,000
	BUREAU OF THE BUDGET REDUCTIONS			
	Division of Research Facilities and Resources:			
	Grants:			
	Research			12,811,000
	Training			182,000
	Direct operations:			
	Collaborative research and development			105,000
	Review and approval of grants			61,000
	Program direction			7
	Office of International Research:			3
	Research grants			25,000
	Direct operations:			
	International research			2,671,000
	Training activities			694,000
	Division of Computer Research and Technology:			
	Direct operations			+1,000
				881,000
	Subtotal			23
				17,429,000
	Total reductions			64
				20,410,000

PUBLIC HEALTH SERVICE—Continued
History of 1968 estimates—Continued

Appropriation	1967 appro- priation ¹	1968				Department reduction from agency request	Budget Bureau reduction from De- partment submission	Explanation of difference	Posi- tions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget	(d)					
Grants for construction of health research facilities.	\$56,000,000	\$115,000,000	\$100,000,000	\$35,000,000	(d)	\$15,000,000	\$55,000,000	DEPARTMENT REDUCTIONS		\$15,000,000
								The Department reduction of \$15,000,000 was based on a 1967 appropriation of \$50,000,000 for health research facilities construction rather than the \$15,000,000 estimate contained in the President's budget, which was the basis of the PHS request.		
Mental health services and resources.	225,647,000	268,703,000	280,377,000	246,741,000		8,326,000	13,636,000	BUREAU OF THE BUDGET REDUCTIONS		65,000,000
								The Bureau of the Budget reduced the Department's request by \$65,000,000 on the basis that there would be \$15,000,000 of the 1967 appropriation carried forward into 1968.		
								Total reductions		80,000,000
								DEPARTMENT REDUCTIONS		
								Grants:		
								Research		2,237,000
								Training		+ 6,457,000
								Subtotal, grants		+ 3,220,000
								Direct operations:		
								Manpower and training	3	15,000
								Manpower and training	22	
								Regional and field activities	68	11,531,000
								Subtotal	93	8,326,000

PUBLIC HEALTH SERVICE—Continued
History of 1968 estimates—Continued

Appropriation	1967 appropriation	1968				Department reduction from agency request	Budget Bureau reduction from Department submission	Explanation of difference	Positions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget	(d)					
	(a)	(b)	(c)							
National health statistics----	\$9,312,000	10,031,000	\$9,931,000	\$9,767,000		\$100,000	\$164,000	DEPARTMENT REDUCTIONS Automated State vital statistics demonstration project.	0	\$100,000
								BUREAU OF THE BUDGET REDUCTIONS Absorption of civilian pay increase cost.	0	164,000
								Total reductions.	0	264,000
National Library of Medicine.	20,254,000	30,279,000	29,279,000	21,102,000		1,000,000	8,117,000	DEPARTMENT REDUCTIONS Grants: Regional medical libraries		1,000,000
								BUREAU OF THE BUDGET REDUCTIONS Grants:		
								Research.....		1,400,000
								Training.....		150,000
								Construction.....		5,000,000
								Publications and library support.....		700,000
								Library operations.....	15	867,000
								Subtotal.....	15	8,117,000
								Total reductions.....	15	9,117,000

History of 1968 estimates—Continued

Appropriation	1967 appropriation 1	1968				Department reduction from agency request	Budget reduction from Department submission	Explanation of difference	Positions	Amount
		Estimate to Department	Department estimate to Budget	President's budget	(d)					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
BUILDINGS AND FACILITIES—continued										
9. Repairs and improvements—Continued										
National Institutes of Health.	\$500,000	\$1,420,000	\$1,420,000	\$500,000	0	0	\$920,000	Bureau of the Budget, reduction represents deferral of 8 projects indefinitely.	-----	\$920,000
National Institute of Mental Health.	0	990,000	990,000	990,000	0	0	0		-----	
National Library of Medicine.	0	150,000	150,000	75,000	0	0	75,000	Bureau of the Budget, reduction represents scaling down of 3 projects and deferral of 3 others indefinitely.	-----	75,000
10. Northeast shellfish sanitation research center, equipment.	1,108,000	190,000	190,000	0	0	0	190,000	Bureau of the Budget, deferred initial portable equipment purchase to coincide with completion of structure in April 1969.	-----	190,000
11. Southeastern radiological health laboratory.	0	203,000	203,000	0	0	0	203,000	Bureau of the Budget, deferred planning funds indefinitely.	-----	203,000
12. Modernization of hospitals:										
Planning-----	5,021,000	4,134,000	4,134,000	0	0	0	4,134,000	Department allowance provided additional funds for contract drawings and specifications, but did not provide funds for construction at Carville since they could not be obligated in 1968. The original planning schedule has been extended because of problems in developing initial design concept. Planning funds were appropriated in fiscal years 1966 (\$1,093,000) and 1967 (\$5,021,000), a total of \$6,114,000. The Carville working drawings are estimated to be 10 percent complete. Initial programs of requirements are being developed for clearance by the Bureau of the Budget. San Francisco will be presented in the next few weeks. The other 8 programs of re-	-----	8,386,000
Construction—Carville.	0	8,386,000	8,386,000	0	0	\$8,386,000	0		-----	

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 2819

13. International conference building, planning.	0	450,000	410,000	0	40,000	410,000	<p>requirements will have been presented to the Bureau of the Budget by January 1968. Working drawings for all of the hospitals will be completed by fiscal year 1970. A period of from 16 months to 2 years is required to produce working drawings following acceptance of the programs of requirements. Modernization of the last of the hospitals is now estimated to be completed in fiscal year 1973.</p> <p>Bureau of the Budget eliminated planning funds based on reduction of total cost target of modernization program.</p> <p>Subtotal-----</p> <p>Department reduction: Space for National Library of Medicine extramural staff was to have been available in this facility. Department proposal provided such space in the NLM Annex.</p> <p>Bureau of the Budget reduction: Deferred planning funds indefinitely.</p> <p>Subtotal-----</p> <p>Department reduction: Space for NLM extramural staff added.</p> <p>Bureau of the Budget reduction: Deferred planning funds indefinitely.</p> <p>Subtotal-----</p> <p>Bureau of the Budget determined that this project could be more appropriately considered in the GSA budget but did not include an estimate for 1968.</p> <p>Department questioned necessity for a separate PHS injury control facility since the Highway Safety Act authorizes a comprehensive facility for traffic safety research and development.</p> <p>Department deferred construction funds since present design schedule will not be advanced sufficiently to require construction funds in 1968. Planning funds of \$785,000 were appropriated in fiscal year 1961 and \$1,000,000 in fiscal year 1965. The program of requirements is scheduled for submission to the Bureau of the Budget in November 1967. 24 months will be required for the production of working drawings. Construction funds will be required in 1971 with completion date estimated to be August 1973.</p>	4,134,000
								12,520,000
								40,000
14. National Library of Medicine annex.	0	250,000	290,000	0	+40,000	290,000		410,000
								450,000
								+40,000
15. Headquarters building, PHS.	0	2,400,000	2,400,000	0	0	2,400,000		290,000
								250,000
								2,400,000
16. Injury control facility--planning.	0	656,000	0	0	656,000	0		656,000
17. National environmental health sciences center.	0	36,236,000	0	0	36,236,000	0		36,236,000

History of 1968 estimates—Continued

Appropriation	1967 appropriation	1968			Department reduction from agency request	Budget Bureau reduction from Department submission	Explanation of difference	Positions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget					
	(a)	(b)	(c)	(d)					
BUILDINGS AND FACILITIES— CONTINUED									
18. Laboratory facilities, Cincinnati, Ohio.	\$1,285,000	\$19,485,000	0	0	\$19,485,000	0	Department deferred construction funds present design schedule will not be advanced sufficiently to require construction funds in 1968. \$100,000 was appropriated in fiscal year 1968 for site planning, and design funds of \$1,285,000 were appropriated in fiscal year 1967. The program of requirements approval is expected in June 1967. A period of 27 months will be required to produce working drawings. Construction funds will be required in fiscal year 1970 with completion date expected to be June 1973.	-----	\$19,485,000
19. Appalachia center for environmental health studies.	330,000	4,260,000	0	0	4,260,000	0	Funds for design of structure appropriated for fiscal year 1967. Availability of site from University of West Virginia now expected in March 1967. Department action based on a schedule for site acquisition and design indicating construction funds would not be required before 1969.	-----	4,260,000
20. Renovation of outpatient clinic.	0	1,150,000	0	0	1,150,000	0	Department position was that personalized health services project should be located at Staten Island hospital.	-----	1,150,000
21. Child health and human development research facility.	0	9,000,000	0	0	9,000,000	0	Department deferred construction funds since present design schedule will not require construction funds prior to 1969. Planning funds of \$1,000,000 were appropriated in fiscal year 1966. The program of requirements is under review at the Bureau of the Budget. A period of 15 months will be required to produce working drawings after approval of the program of requirements. Construction funds will be required in fiscal year 1969 with completion date expected to be July 1971.	-----	9,000,000

22. Child health—inter-national conference building cafeteria—planning.	0	85,000	0	0	0	85,000	0	Department deferred planning funds to coincide more closely to design schedule of Child Health Research Facility.	85,000
23. Center for biomedical communications, NLM.	0	900,000	0	0	0	900,000	0	Department recommended that this research and development space be accommodated within the NLM Annex. The Budget Bureau deferred funds for the annex indefinitely.	900,000
Total buildings and facilities.	11,503,000	110,915,000	\$29,904,000	\$10,715,000	19,199,000	81,011,000	0		100,200,000
Scientific activities overseas.	10,000,000	18,685,000	18,685,000	18,685,000	0	0	0		
Retired pay of commissioned officers.	10,743,000	13,391,000	13,391,000	13,391,000	0	0	0		
Comprehensive health planning and services.	123,557,000	145,001,000	145,001,000	143,625,000	0	1,373,000	0	BUREAU OF THE BUDGET REDUCTIONS	
								Review and approval.	500,000
								Program direction and technical assistance.	873,000
								Total reduction.	38
								DEPARTMENT REDUCTIONS	1,373,000
								Management and central services:	
								Equal employment opportunity.	+71,000
								Civil rights contract compliance.	+385,000
								Subtotal.	+30
								BUREAU OF THE BUDGET REDUCTIONS	+456,000
								International health activities.	
								Management and central services:	5
								Immediate Office of the Surgeon General.	2
								Office of Extramural Programs.	6
								Office of Legislation.	86,000
								Office of Administrative Management.	22,000
								Office of Personnel.	16
								Office of Information.	34
								Office of Program Planning and Evaluation.	8
								Contract compliance.	18
								Equal employment opportunity.	3
								Subtotal.	100
								Total reductions.	2,028,000
									1,572,000
Office of the Surgeon General, salaries and expenses.	7,755,000	10,650,000	11,115,000	9,087,000	2,028,000	+456,000	2,028,000		

¹ Includes proposed supplementals.² This program purpose qualifies for funding under the authorization of Public Law 89-749, "Comprehensive Health Planning and Public Health Services Amendments of 1966."³ Includes \$35,000,000 submitted at the request of the Appalachian Regional Commission, which is contingent upon extension of the Appalachia Regional Development Act.⁴ Allowances were made by both the Department and Bureau of the Budget on a total NIH basis, rather than by appropriation. Adjustments were made between Institutes and activities to effect the best distribution of positions and funds. This resulted in increases in some activities as well as decreases, all of which are reflected in these tabulations as adjustments, but do not necessarily represent specific Department or Bureau of the Budget actions.

ST. ELIZABETHS HOSPITAL

History of 1968 estimates

Appropriation	1967 appropriation	1968				Explanation of difference	Positions	Amount
		Estimate to Department	Department estimates to Budget Bureau	President's Budget	Department reduction from agency request	Budget Bureau reduction from Department submission		
	(a)	(b)	(c)	(d)	(e)	(f)		
Salaries and expenses-----	\$32,605,000	\$37,674,000	\$35,266,000	\$35,140,000	\$2,408,000	\$126,000		\$1,783,500
								499,500
								125,000
								2,408,000
								39,000
								29,000
								23,000
								15,100
								14,000
								5,900
								126,000
								2,534,000

DEPARTMENT REDUCTIONS

1. 400 new positions for relief of understaffing in psychiatric rehabilitation, research, training and other program areas.
2. Lapse of function to permanent positions from 5.4 percent to 3.6 percent.
3. Comprehensive study of data processing needs and potentials of St. Elizabeths Hospital.

Subtotal-----

BUREAU OF THE BUDGET REDUCTIONS

1. Increase of summer employment program from 31 employees to 60.
2. Replacement equipment deferred pending Eldridge Building modernization.
3. Patient remuneration for work performed under rehabilitation program.
4. Travel for attendance at meetings and recruitment.
5. Maintenance supplies-----
6. Miscellaneous-----

Subtotal-----

Total salaries and expenses reductions-----

Buildings and facilities-----	2,298,000	10,130,000	9,920,000	1,237,000	210,000	8,883,000	DEPARTMENT REDUCTIONS	75,000
							1. Program statement funds leading to construction of a training and research center.	70,000
							2. Construction of funds for quarters for the superintendent.	40,000
							3. Program statement funds leading to construction of a treatment center for adolescents. (This request was made before the action of the Congress on the 1967 budget)	
							4. Program statement funds leading to construction of a consolidated shops and maintenance building.	25,000
							Subtotal-----	210,000
							BUREAU OF BUDGET REDUCTIONS	8,683,000
							1. Deferral of request for construction funds for a new security facility because construction contract could not be awarded until 1969. In 1966 an amount of \$25,000 was made available to prepare a program statement for this project and the 1967 appropriation included \$450,000 for architectural and engineering planning. It is expected that plans will be approved in June 1968.	
							Total buildings and facilities reductions.	8,883,000
Subtotal-----	34,903,000	47,804,000	45,186,000	36,377,000	2,618,000	8,809,000		
Less reimbursements-----	22,745,000	26,276,000	26,167,000	26,096,000	109,000	71,000		
Total, St. Elizabeths Hospital.	12,158,000	21,528,000	19,109,000	10,281,000	2,509,000	8,738,000		

¹ Includes proposed supplementals.

SOCIAL SECURITY ADMINISTRATION
History of 1968 estimates

Appropriation	1967 appropriation ¹ (a)	1968			Department reduction from agency request (e)	Budget reduction from Department submission (f)	Explanation of difference	Positions	Amount
		Estimate to Department (b)	Department estimate to Budget Bureau (c)	President's budget (d)					
Limitation on salaries and expenses (trust fund).	\$500,459,000	\$651,878,000	\$651,878,000	\$635,260,000 ^{Ap}	-----	\$16,618,000	BUREAU OF THE BUDGET ACTION Adjustments to conform with Bureau of the Budget recommendations were made as follows: 1. Reduction in the contingency fund (\$10,000,000). 2. Reduction in payroll costs of \$5,900,000 for (a) decrease in work output estimates (\$2,600,000) (b) increase in productivity (\$1,300,000), and (c) higher manpower lapse for staff positions (\$2,018,000). 3. Reduction in other objects costs of \$700,000 related to the reduction in manpower.	-----	\$10,000,000 5,918,000 700,000
							DEPARTMENT REDUCTIONS A reduction in the number of district offices for which funds were requested from 30 to 22 accounts for the \$2,573,000 decrease from the request.		
							BUREAU OF THE BUDGET REDUCTIONS The \$7,076,000 requested for the construction of 22 district office buildings was denied. The \$934,000 approved is for planning of multilevel parking facilities at headquarters. Proposed amendment to the appropriation language which would authorize increases in already funded projects commensurate with the rise in construction costs was denied.		
Limitation on construction (trust fund).	43,189,000	10,283,000	7,710,000	634,000	\$2,573,000	7,076,000		-----	2,573,000 7,076,000

SOCIAL SECURITY ADMINISTRATION—Continued
History of 1968 estimates—Continued

Appropriation	1967 appropriation ¹	1968				Department reduction from agency request	Budget reduction from Department submission	Explanation of difference	Positions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget	(c)	(d)	(e)			
	(a)	(b)	(c)	(d)	(e)	(f)				
Social security research (special foreign currency program).	-----	\$1,000,000	-----	-----	\$1,000,000	-----	\$1,000,000	DEPARTMENT REDUCTIONS The Department denied the request for social security research as a low-priority item.	-----	\$1,000,000
Cooperative research or demonstration projects.	-----	1,000,000	\$1,000,000	-----	-----	-----	\$1,000,000	BUREAU OF THE BUDGET ACTION In fiscal year 1967, the Social Security Administration is authorized to spend \$700,000 from the appropriation made to the Welfare Administration for cooperative research and demonstration projects. The Department requested the Budget Bureau for 1968 to provide for separate appropriation authority for SSA and an increase of \$250,000 over the 1967 level. The separate authority was denied by the Budget Bureau and the amount in the Welfare Administration's 1968 estimate to the Congress earmarked for SSA is \$310,000.	-----	1,000,000
Total, Social Security Administration: (General fund)----- (Trust fund)-----	\$1,029,050,000 643,648,000	1,056,592,000 662,161,000	1,138,592,000 659,588,000	\$1,011,631,000 635,894,000	+72,000,000 2,573,000	116,961,000 23,694,000	-----	-----	500	44,961,000 26,267,000

¹ Includes proposed supplementals.

WELFARE ADMINISTRATION

History of 1968 estimates

Appropriation	1967 appropriation ¹	1968				Department reduction from agency request (e)	Budget reduction from Department submission (f)	Explanation of difference	Positions	Amount
		Estimate to Department (b)	Department estimate to Budget Bureau (c)	President's budget (d)						
Grants to States for public assistance, ² Assistance for repatriated U.S. nationals.	\$3,981,500,000 460,00	\$4,240,000,000 525,000	\$4,240,000,000 525,000	\$4,240,000,000 525,000						
Bureau of Family Services, salaries and expenses.	7,890,000	9,653,000	9,653,000	8,559,000			\$1,064,000	BUREAU OF THE BUDGET REDUCTIONS Eliminates 88 of the new positions requested. This reduction was applied as follows: 43 for providing policies, standards, guides, and other assistance to States; 11 for research and statistical activities; 26 for administrative review of State and local operations; and 8 for increase in workload in inquiry mail and management activities. Bureau of the Budget reduction reduces the amounts requested for the following programs: Maternal and child health services..... Crippled children's services..... Child welfare services..... Research, training, or demonstration projects in child welfare. Training of professional personnel for the care of crippled children. Research projects relating to maternal and child health and crippled children's services.	88	\$1,064,000
Grants for maternal and child welfare.	228,900,000	264,000,000	264,000,000	239,320,000			24,680,000			5,000,000 5,000,000 9,000,000 1,800,000 3,000,000 880,000
								Total.....	88	24,680,000

Office of the Commissioner. salaries and expenses	1,522,000	2,123,000	2,123,000	2,123,000	1,888,000	\$241,000	Eliminates 15 of the new positions requested. This reduction was applied as follows: 2 in the medical policy area; 5 for financial and administration management and services; and 9 in the research area, including administration of the directed research program, international research, and social work manpower training.	16	241,000
Total, Welfare Administration.	4,238,460,000	4,529,365,000	4,529,365,000	4,529,365,000	4,502,477,000	26,888,000	Total.....	145	26,888,000

1 Includes proposed supplementals.
 2 Includes proposed supplementals included in the President's budget.
 3 Estimates to Department and Bureau of the Budget include 7 positions and \$128,000 that was requested as a separate appropriation item "White House Conference on Children and Youth." Bureau of the Budget provided for 5 positions and \$77,601 for this item to be included in the Children's Bureau, salaries and expenses appropriation request.
 4 Legislative authorization expires June 30, 1967.

3. Technical assistance, services, and administration:	The Bureau of the Budget disallowed 9 positions and \$429,000 for the following activities: 4 positions and \$100,000 for State grant programs; 3 positions and \$75,000 for project grant program; 1 position and \$225,000 for public information activities including an expansion of publications; and 1 position and \$25,000 in the area of program management.	361,000	3	250,000	250,000	250,000	250,000	250,000
Research and training (special foreign currency program).	The Bureau added 6 positions and \$68,000 to administer an expanded program of pilot nutrition projects. The result was a net reduction of 3 positions and \$361,000. The Bureau of the Budget disallowed a requested program of research and training grants to be funded from Public Law 480 funds. The request was for \$250,000 to fund about 5 projects.	250,000	250,000	250,000	250,000	250,000	250,000	250,000

¹ Includes proposed supplementals.

SPECIAL INSTITUTIONS
History of 1968 estimates

Appropriation	1967 appropriation	1968				Department reduction from agency request	Budget Bureau reduction from Department submission	Explanation of difference	Positions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget						
	(a)	(b)	(c)	(d)	(e)	(f)				
American Printing House for the Blind.	\$1,027,500	\$1,264,000	\$1,264,000	\$1,225,000			\$39,000	BUREAU OF BUDGET REDUCTION Revised estimate of production costs. The estimated \$60 per pupil grant for 19,840 pupils was revised to allow \$58.46 for the same number of pupils. The allotment for 1967 is \$50 per pupil.		\$39,000
	491,000	6,296,000	6,296,000	2,615,000			3,681,000	Bureau of Budget reductions. The requests of \$600,000 for site development and planning and \$650,000 for site acquisition were allowed. The request of \$3,681,000 for actual construction was disallowed. The balance of \$1,365,000 will provide for administration and curriculum development.		3,681,000
Model Secondary School for the Deaf: Salaries		470,000	47,000	425,000			45,000	Bureau of Budget reduction. The request for general administrative planning was reduced to \$100,000. A shift in emphasis allowed retention of the full 8 positions.		45,000
								Subtotal, salaries and expenses.		45,000
Construction		1,030,000	1,030,000	275,000			755,000	Bureau of Budget reduction. The original request of \$200,000 for initial site preparation and \$830,000 for plans and construction was reduced to \$65,000 for site preparation and \$210,000 for plans with no construction allowed.		755,000

LABOR-HEALTH, EDUCATION, WELFARE APPROPRIATIONS 2833

Total	1,500,000	1,500,000	700,000	800,000	Subtotal, construction		
Galladet College: Salaries and expenses	2,542,000	3,206,000	2,878,000	323,000	<p>Improvement of Laboratory School. The reduction eliminated 9 professional specialists, 4 teachers, and 1 secretary which were intended to decrease the student-teacher ratio from the existing 8.9:1 to 6:1. The positions were intended primarily to permit more effective handling of the 14 of the student body which is multiple handicapped and/or educationally deprived.</p> <p>Graduate school. The reduction of 2 professors and 1 secretary anticipates that this staffing would be funded through a grant award.</p> <p>Electronic data processing facility. The reduction eliminated 1 teaching position in the field of computer science and the cost of replacement of the college's existing computer which is obsolete and inadequate. The reduction prohibits a planned expansion of student enrollment in laboratory courses and the initiation of a program of computer-assisted instruction.</p> <p>Maintenance costs. The reduction eliminated replacement of a 38-passenger vehicle (\$7,525), increased maintenance supply requirements (\$7,200), and planned savings under the cost reduction program (\$35,000).</p>	<p>14</p> <p>3</p> <p>1</p>	<p>755,000</p> <p>800,000</p> <p>160,000</p>
Construction	70,000	3,097,000	2,196,000	901,000	<p>Program of renovations and improvements. The reduction eliminated \$136,000 to air condition the laboratory school, which is now in 12 months' operation, and to continue the alteration and renovation program, including installation of bleachers in the gymnasium.</p> <p>Kendall School addition (planning). This program was to plan expansion of the laboratory school.</p>		<p>323,000</p> <p>196,000</p> <p>80,000</p>

SPECIAL INSTITUTIONS—Continued
History of 1968 estimates—Continued

Appropriation	1967 appropriation	1968				Department reduction from agency request	Budget Bureau reduction from Department submission	Explanation of difference	Positions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget	(c)	(d)	(e)			
	(a)	(b)	(c)	(d)	(e)		(f)			
								Library addition (construction) This addition was planned to increase the capacity from 790 students to 1,350, and to accommodate the increasing number of library books, and to provide for office spaces.		535,000
								Maintenance building (construction) The maintenance building would have provided space for repairing vehicles, and for storage of outside equipment which is now left outside.		50,000
								Subtotal, construction		901,000
Total.....	\$2,612,000	\$6,303,000	\$6,303,000	\$5,074,000			\$1,229,000	Total, Gallaudet College	18	1,229,000
								DEPARTMENT ADDITION		
Howard University: Salaries and expenses.....	13,534,000	15,852,000	16,069,000	15,300,000			769,000	Dentistry The increases will remedy deficiencies in the existing instructional program through additions to the curriculum and the replacement and modernization of equipment. These deficiencies were brought to the attention of the university by the accrediting agencies.	+18	+217,000

BUREAU OF BUDGET CHANGES

Construction.....	3,342,000	24,725,000	24,726,000	23,111,000	1,615,000	Liberal arts complex. The addition of 24 teaching positions and 7 supporting personnel positions would have improved the quality of instruction and allowed the college to approach the approved 13:1 student-teacher ratio.	31	294,000
						Physical plant rehabilitation projects: Air conditioning of 5 classroom buildings. Activation of elevator in classroom building.		250,000
						Enlargement of telephone switchboard and establishment of information booth in administration buildings.		25,000
						Residence halls: Replacement of elevators in 3 women's dormitories.		21,026
						Replacement of plumbing lines in 2 men's dormitories.		75,000
						Conversion of heating units from coal to oil.		60,974
						Centralization of electronic control of steam and ventilation equipment.		18,000
						Replacement of boilers and extension of steam distribution system in 2 classroom buildings.		75,000
								+50,000
						Subtotal, physical plant.....		475,000
						Net change, salaries and expenses.		552,000
						Medical-dental library expansion (construction)—the planned expansion would have been developed in conjunction with the new hospital facilities.		400,000
						Animal Center (construction); the center would have supplemented the university's research program.		200,000
						General library expansion (planning); exploration of expansion plans to accommodate increased enrollment.		100,000
						Powerplant renovations; planning money (\$85,000) for this project has been allowed; since the planning itself will take 6 to 9 months, it was decided to postpone the actual work.		915,000
						Subtotal, construction.....		1,615,000

SPECIAL INSTITUTIONS—Continued
History of 1968 estimates—Continued

Appropriation	1967 appropriation	1968				Explanation of difference	Positions	Amount
		Estimate to Department	Department estimate to Budget Bureau	President's budget	Department reduction from agency request	Budget Bureau reduction from Department submission		
	(a)	(b)	(c)	(d)	(e)	(f)		
Freedmen's Hospital.....	\$6,639,000	\$6,970,000	\$6,881,000	\$6,700,000	\$89,000	—\$181,000		\$62,000
							DEPARTMENT REDUCTIONS	
							Purchases of medical and surgical equipment.....	6,000
							Repairs and alterations: Installation of lights in parking lot.....	5,000
							Installation of sprinkler system in storage areas.....	12,000
							Provision of additional storage space in hospital.....	2,000
							Floor tile replacements.....	2,000
							Installation of a secondary exit door in medical record area of intern's home.....	
							Subtotal, repairs.....	27,000
							BUREAU OF THE BUDGET REDUCTIONS	
							Purchase of medical and surgical equipment.....	181,000
							Subtotal, Freedmen's Hospital.....	270,000
								K

1 Includes proposed supplementals.

OFFICE OF THE SECRETARY
History of 1968 estimates

Appropriation	1967 appro- priation 1 (a)	1968			Depart- ment re- duction from agency request (e)	Budget Bureau reduction from De- partment submission (f)	Explanation of difference	Posi- tions	Amount
		Estimate to Depart- ment (b)	Depart- ment esti- mate to Budget Bureau (c)	President's budget (d)					
Salaries and expenses, Office of the Secretary. Transfers from trust funds ----	\$5,509,000 (975,000)	\$10,162,000 (1,518,000)	\$8,750,000 (1,310,000)	\$3,088,000 (1,211,000)	\$1,412,000 (208,000)	\$662,000 (99,000)	Civil rights activities.....	130	\$1,231,700
							Assistant secretaries:		
							Education.....	6	56,800
							Health and scientific affairs.....	17	161,000
							Individual and family services.....	7	66,300
							Legislation.....	2	18,900
							Program coordination.....	8	75,800
							Subtotal.....	40	378,800
							Public information.....	1	9,500
							Total department.....	171	1,620,000
							BUREAU OF THE BUDGET REDUCTION		
							Office of public information.....	2	65,00
							Assistant secretaries:		
							Special projects:		
							Education.....		35,000
							Health and scientific affairs.....		35,000
							Individual and family services.....		35,000
							Program coordination.....		35,000
							Subtotal, special projects.....		140,000
							Special civil rights studies and data processing.....		410,000
							Other personnel and related costs.....		146,000
							Total Bureau of the Budget reduction.....		761,000
							Total reduction.....	173	2,381,000

							Total, Bureau of the Budget reduction.....	8	251,000
							Total reduction.....	39	662,000
							DEPARTMENT REDUCTION		
							Office of Internal Security.....	2	23,000
							BUREAU OF THE BUDGET REDUCTION		
							Executive office.....	2	23,000
							Personnel.....	1	14,000
							Management consultation.....	1	14,000
							Management planning.....	2	26,000
							Internal security.....	3	25,000
							General services.....	4	40,000
							State merit systems.....	4	50,000
							Management intern program.....	4	47,000
							Increased lapse on new positions.....	---	60,000
							Total, Bureau of the Budget reduction..	17	299,000
							Total reduction.....	19	322,000
							DEPARTMENT REDUCTION		
							Headquarters:		
							Personal property screening.....	1	11,000
							Real property management.....	1	11,000
							Field:		
							Personal property screening.....	5	56,000
							Real property workload.....	6	66,000
							Total, department.....	13	144,000
							BUREAU OF THE BUDGET REDUCTION		
							Headquarters: Personal property screening.....	1	26,000
							Field: Personal property screening.....	2	53,000
							Total, Bureau of the Budget reduction..	3	79,000
							Total reduction.....	16	223,000
Salaries and expenses, Office of Administration.	2,253,000	2,835,000	2,816,000	2,547,000	19,000	269,000			
Transfers from trust funds.....	(271,000)	(305,000)	(301,000)	(271,000)	(4,000)	(30,000)			
Surplus property utilization.....	1,123,000	1,342,000	1,198,000	1,119,000	144,000	79,000			

OFFICE OF THE SECRETARY—Continued
History of 1968 estimates—Continued

Appropriation	1967 appro- priation 1	1968				Explanation of difference	Posi- tions	Amount
		Estimate to Depart- ment	Depart- ment esti- mate to Budget Bureau	President's budget	Depart- ment re- duction from agency request	Budget Bureau reduction from Depart- ment submission		
	(a)	(b)	(c)	(d)	(e)	(f)		
Salaries and expenses, Office of Gen- eral Counsel.	\$1,800,000	\$2,111,000	\$2,111,000	\$1,974,000	-----	\$137,000	4	\$57,000
Transfers from trust funds.	(1,330,000)	(1,404,000)	(1,404,000)	(1,373,000)	-----	(31,000)	3	19,000
							3	18,000
							4	37,000
							2	10,000
							2	11,000
							3	16,000
							21	168,000
								4,050,000
								7,000,000
								2,300,000
								2,300,000
								18,000
							23	402,000
							1	9,000
							2	17,000
							2	17,000
							6	103,000
							13	14,000
							31	272,000
							10	123,000
							8	70,000
							98	1,150,000

BUREAU OF THE BUDGET REDUCTION

- Supervisory and general legal services.-----
- Public Health Division.-----
- Food and Drug Division.-----
- Health Insurance Division.-----
- Welfare and Rehabilitation Division.-----
- Education Division.-----
- Regional and Field.-----
- Total reduction.-----
1. Grants for undergraduate international studies.-----
2. Grants for advanced international studies.-----
3. Language and area programs (NDEA title VI).-----
4. Foreign language training and area studies (Fulbright-Hays).-----
5. Immediate office of the Director.-----
- Clearinghouse; public information; reporting.-----
- Corps of Educational Officers.-----
- Binational education foundations.-----
- Conferences of leaders and experts.-----
- American Education Placement Service.-----
- Office of Manpower Research.-----
- Office of Planning and Evaluation.-----
- Undergraduate programs for international studies.-----
- Graduate programs for international studies.-----

Subtotal

CONCLUSION OF HEARING

Senator HILL. All right; that concludes our hearing for today. The committee will now adjourn.

(Whereupon, at 3:25 p.m., Monday, June 26, 1964, the hearing was concluded and the subcommittee was recessed, to reconvene at the call of the Chair.)

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